A CONTRASTIVE STUDY OF THE TONGA AND ENGLISH PHONOLOGICAL SYSTEMS IN RELATION TO THE SPOKEN PERFORMANCE OF SELECTED GROUPS OF TONGA SPEAKERS.

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DEDICATION

To my brothers for sacrifices

made on my behalf.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd.)

PREFACE

A number of books on English phonetics for foreign students have been written, equally a number of studies on the sound systems of the Bantu Languages of Zambia have been undertaken, but so far no systematic contrastive study of any specific Bantu Language of Zambia and English, has been undertaken in a community where both English and the Bantu languages play such an important role in the lives of the people. Of particular importance is the use made of English as a medium of instruction in schools, and the fact that the future of every Zambian child lies largely in his performance in the English language both in the written and spoken aspect of it.

This work is an attempt to study the spoken performance in the English language of Tonga speaking children at two different stages of their education using a constrastive study of the sound systems of the two languages as a basis. The study aims at finding out firstly, how far the spoken performance of the Tonga children diverges from that of standard English, and whether the divergencies can be explained in any way by what happens in the two languages.

One aspect which this study proposes to deal with, which has not been attempted so far by anyone, is an analysis of Tonga children's performance in English stress and intonation.

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iii. List of Phonetic Symbols and Signs

i:	- English variety of cardinal vowel 1
i	- Tonga variety of cardinal vowel 1
i.	- short version of Tonga variety of cardinal vowel 1
I	- English short front vowel
ɛ	- English variety of cardinal vowel 3
e	- Tonga variety of cardinal vowel 2
ɑ	- Tonga variety of cardinal vowel 4
æ	- English short front vowel
ɑ:	- English variety of cardinal vowel no. 5
D	- English short back vowel
ɔ:	- English variety of cardinal vowel 6
o	- Tonga variety of cardinal vowel 7
u:	- English variety of cardinal vowel 8
u	- Tonga variety of cardinal vowel 8
ʊ	- English short back vowel
ɜ:	- English long central vowel
ə	- English short central vowel
ʌ	- English open central vowel
p	- voiceless bilabial plosive
b	- voiced bilabial plosive.
t	- voiceless alveolar plosive
d	- voiced alveolar plosive
k	- voiceless velar plosive
g	- voiced velar plosive
ɟ	- voiced palatal plosive
tʃ	- voiceless palatal affricate
dʒ	- voiced palatal affricate

m	- bilabial nasal
n	- alveolar nasal
ɲ	- palatal nasal
ŋ	- velar nasal
l	- alveolar lateral
ɫ	- English dark l
ɾ	- alveolar flap
β	- voiced bilabial fricative
f	- voiceless labio dental fricative
v	- voiced labio dental fricative
θ	- voiceless dental fricative
ð	- voiced dental fricative
s	- voiceless alveolar fricative
z	- voiced alveolar fricative
ʃ	- voiceless palato alveolar fricative
ʒ	- voiced palato alveolar fricative
hj	- voiceless palatal fricative
ɦj	- voiced palatal fricative
sj	- clustering of voiceless alveolar fricative + palatal semi-vowel
zj	- clustering of voiced alveolar fricative + palatal semi-vowel
ɣ	- voiced velar fricative
hw	- voiceless glottal fricative + labialization
ɦw	- voiced glottal fricative + labialization
h	- voiceless glottal fricative + labialization
w	- bilabial semi-vowel
j	- palatal semi-vowel

r - post-alveolar frictionless continuant

/ - high tone

\ - low tone

~ - nasalization e.g. : (k̃wi)

¨ - centralization e.g. : (ɪ̈)

ɾ - more open quality (ɪ̞)

ɣ - unrounded cardinal vowel no 7

. - closer quality e.g. (e̝)

: - length - e.g. (i:)

. - half length e.g. (i.)

[ˈ] - main stress on following syllable

[ˌ] - stressed syllable

[|] - End of word group with close grammatical connection

[||] - End of utterance

[o] - stressed syllable

[·] - unstressed syllable

[↘] - falling head

[↗] - rising head

[ː] - geminate and reinforced consonant e.g [bː]

CHAPTER 1

INTRODUCTION:-

Zambia, like many of Britain's former colonies, uses English as a medium of instruction in schools. Immediately after independence in 1964, Zambia decided to use English as a medium of instruction in all schools from grade 1 to University level. The language situation remained as such until this policy was reversed in the new educational reforms put forward by the Government in 1975. In these reforms it was suggested that English should be taught as a subject in the first four years of a child's education. The medium of instruction during these years should be in the local language commonly used in a given area. After the fourth grade, however, English should be used as the medium of instruction. However, at the time when the data for this study were being collected, the education reforms on language use in schools had not yet been implemented. The primary school where some of the data was collected, was still using the old system under which English was the medium of instruction from grade 1 upwards.

There is always controversy among Zambian educationists over the status of English in schools, and the threat it poses to the teaching of local languages. Some believe that it is psychologically upsetting for a child to receive instruction, and indeed his first reading lessons, in a language hecan hardly understand when he is starting school. This group believes that this might have adverse effects on the child's progress at school. Others feel that since the child will have to receive instruction in the English language at some stage in his education, the sooner this is done the better. Others still, look at the problem as a competition between English and the local languages, and in a wider sense, between western culture and the local culture. This group

believes that the special status accorded to English in schools, particularly under the 1965 policy, when English was used as a medium of instruction throughout the child's education, was a serious threat to the position of the local languages and the culture embodied in them. Whatever the merits of each of these arguments, the main point of interest for this study is that none of these opposing groups offers any objection to the use of English as a medium of instruction at some stage in the child's education. Their main area of difference seems to be at what stage this should happen, and how much time should be devoted to English, and to the local languages, respectively.

This study makes no attempts to extol the merits of any of these views. Our main interest as far as this study is concerned is the fact that English is, and will continue to be used as a medium of instruction in Zambian schools for a long time to come. It was on this basis that this study was conceived and the belief that such a study would be useful to Zambia for some time to come.

The work itself proposes to study the spoken performance in the English language of a group of Tonga speaking children at two different stages in their education, and to determine how far their performance diverges from standard English at a phonological level. This study also hopes to establish whether there are any changes that take place in the children's pronunciation at each of these stages in their education.

The two stages of education chosen for this study are grade 5 and form 3. The informants in grade 5 have had four full years of formal education, and are in their fifth year. The informants in form 3 have had nine years of formal education and are in their tenth. English has been used as the medium of instruction throughout the period each informant has been in school. Informants in grade 5 have so far been taught by Zambian born teachers, while informants in form 3 have been taught by Zambian born teachers from grades 1 to 7, and then by a mixture of Zambian and expatriate teachers, the latter mainly from the United States, from forms 1 to 3.

It was the intention of the writer to take one of the lower grades i.e. grade 1 or 2 instead of grade 5 in order to assess the methods used to expose the child to the language he is about to learn at the very beginning of his education. However, it was decided that it would be difficult to collect much in the way of data with any of the lower grades within the time available to the writer. Form 3 was chosen mainly because it is midway through the secondary school system. This is the stage when children in secondary schools write their first public examination, the Junior School Certificate Examination. Those who do well in this examination proceed to the Ordinary level; those who do not, leave school in search of jobs or training of some kind. This stage therefore is interesting particularly as it concerns children in that section of the school population who might have to leave school after the Public Examination. It means that they may have to make do with whatever skills in the spoken and written aspect of the English language they may have managed to learn in the ten

years of formal education without any further help from a teacher. Furthermore, whereas up till now the written aspect of the language has been the student's main preoccupation, the importance of the spoken aspect of the language becomes all too apparent as one prepares to go 'job hunting'. The ability to speak in 'good' English would no doubt create a favourable impression on the prospective employers.

The first section of this study is a description of the sound systems of English and Tonga. It is hoped that the knowledge of the sounds of the target language i.e. the language which the informants are in the process of learning, as well as the sounds of the language which the informants have already mastered, will be useful as it will give us an idea of what is going on in each language at the phonetic and phonological level - and it might also help to explain some of the divergences from standard English we might encounter in the informant performance. This pronunciation performance is based on a Reading Exercise which the informants undertook from two grade 5 English readers.

The third section of this work is an analysis of the responses of the Tonga informants to an exercise designed to test their ability not only to make an auditory distinction, but also to pronounce the various English vowel sounds and consonants with adequate articulatory distinction. The exercise is based on a tape-recorded list of English words containing minimal pairs, triplets, and consonant clusters, read out by an English speaker which was played to the

Tonga informants for repetition and their responses being tape-recorded.

This exercise aims at establishing whether or not there would be any significant difference in the pronunciation of English sounds by the Tonga informants, between this exercise where they have to repeat the sounds after a speaker of English as first language and the first exercise which is based on their spontaneous speech.

SECTION 1 CHAPTER 2

A DESCRIPTION OF TONGA SOUNDS

i. CONSONANTS

The Tonga language covers a group of dialects spoken in the southern part of Zambia. A certain amount of variation in pronunciation, grammar and vocabulary exists within this area. In addition to this there are the ILA, SALA and LENJE languages spoken in the west, east and north of the Tonga speaking area respectively, which have close affinities to it. In this work the Tonga speaking area will be divided into Northern and Southern Tonga. The present sketch of Tonga phonetics is based on the writer's own speech which for the purposes of this paper shall be classed under Southern Tonga with notes on varieties which differ from this.

Tonga uses 25 single consonant phonemes including the semi-vowels, and these can be grouped according to place and manner of articulation.

The plosives: plosive sounds are made by stopping the air stream completely and then releasing the imprisoned air which escapes through the mouth making an explosive sound. There are six such sounds in Tonga, viz:

p	t	k
b	d	g

The following words show their occurrence in initial and medial positions:

/p/

pula	[pula]	dish out
kupinga	[kupinga]	to obstruct
sepa	[sepa]	sieve

/b/		
bbubba	[buba]	struggle (physically)
kubbila	[kubila]	to sink
bba	[ba]	steal

/t/		
tukana	[tukana]	insult
butimba	[βutimba]	mud
ciloto	[tʃiloto]	a dream

/d/		
delele	[delele]	okra
mudima	[mudima]	darkness
cilido	[tʃilido]	eating vessel

/k/		
kamba	[kamba]	clap
lukoma	[lukoma]	drinking vessel
kapuka	[kapuka]	an insect

/g/		
gaya	[gaja]	grind
mugomo	[mugomo]	water container
cipego	[tʃipego]	a gift

Voiceless plosives: The Tonga voiceless plosives bilabial /p/, alveolar /t/ and velar /k/ are produced with slight aspiration. Aspiration is not a distinctive feature in Tonga therefore the presence of it makes no semantic difference to lexical items. The velar /k/ has an additional feature which it shares with the voiced

plosives and that is that, it is 'reinforced'. These plosives are exploded in all positions.

Voiced plosives: bilabial /b/, alveolar /d/, and velar /g/,

The distinctive feature of the Tonga voiced plosives is that the effort put into producing the sounds is much greater than for instance in the English voiced plosives and for this reason these consonants are referred to as 'reinforced'. The Tonga voiced plosives are voiced and exploded in all positions.

/ɟ/ is a voiced light palatal plosive which is produced by the front of the tongue making contact against the hard palate. According to Dr. Carter's Chapter on Tonga grammar, p. 4, this sound sometimes occurs in free variation with the palatal fricative /j/ in some people's speech. Both /ɟ/ and /j/ are absent in my speech; their place being taken by the voiceless affricate /tʃ/.[2]

Examples:-

/ɟ/ /j/	cintu	[ɟintu]	thing
	buce	[βuje]	when it was dawn

Affricates:- An affricate is a consonant sound made up of a sequence of a plosive followed by a fricative. It is produced by stopping the air completely as if one is going to produce a plosive sound and then opening the closure slightly so that the air causes friction. The initial plosive sound and the fricative which follows are made nearly at the same place of articulation and are normally both voiced or voiceless. Consequently an affricate sound can be made

wherever a plosive, is made, and like plosives voiceless affricates can be aspirated or unaspirated according to their phonological environment.

Affricates:- /tʃ/

cula	[tʃula]	frog
a coolwe	[ətʃoolwe]	with luck
bwaca	[βɣatʃa]	it is dawn
/dʒ/		
j ulu	[dʒulu]	sky, heaven
kujata	[kudʒəta]	to hold
luja	[ludʒə]	a horn

Fricatives: Fricatives are consonant sounds made by bringing two organs of speech close together leaving a narrow space between them through which the air from the lungs escapes. The air causes friction as it forces its way out through the narrow passage. The friction may or may not be accompanied by voice. The following are the fricatives in Tonga:-

Bilabial	alveolar		palato-alveolar	palatal	velar	Labio/velar	glottal
	s	sj	ʃ	hj		hw	h
β	z	zj	ʒ	ɦj	ɣ	ɦw	

of these only the following are in the writer's speech:- /β/, /hw/, /ɦw/, /s/, /z/, /hj/, /ɦj/, /h/, occasionally /ʃ/ as variant of /hj/. /β/ is a voiced bilabial fricative produced by bringing the two lips together leaving a narrow space through which the air passes. It is sometimes heard as a weakly articulated /b/ in free variation with the fricative type in some people's speech. /β/ can be followed by all vowels. The following are examples of it occurring in initial and medial positions:

/β/

benda	[βenda]	stalk
cibanda	[tʃiβanda]	molar
kusiba	[kusiβa]	to whistle

Labio-velar fricatives:- /hw/ and /ʃw/ involve two articulators. The air is expelled from the lungs causing considerable pressure throughout the vocal tract. However, stricture occurs at the labial and velar positions. The lips are rounded and the back of the tongue is raised towards the soft palate as in the pronunciation of [w] . The /w/ off-glide occurs more prominently when the following vowel is a front one. Both /hw/ and /ʃw/ can be followed by all vowels as in the following examples:-

/hw/

fwinkaila[3]	[hwiŋkaila]	sob
kufweba	[kuhweβa]	to smoke
simaafwa	[simaahwa]	an epilepitic

/ ʃw /

vwikila	[ʃwikila]	bury
kuvwula	[kuʃwula]	to be plentiful
kuvwola	[kuʃwola]	to get paid

/s/, /z/ are alveolar fricatives produced by the blade of the tongue making contact with the alveolar ridge. The tongue is considerably contracted laterally and the passage through which the air passes is very narrow. The air causes friction between the tongue and the alveolar ridge. The friction being voiceless for /s/ and voiced for /z/. Both /s/ and /z/ can be followed by all vowels and they can

both occur in initial and medial positions. The following are examples of this:-

/s/

Samba	[samba]	wash.
kusuma	[kusuma]	to sew
busu	[βusu]	Maize flour

/z/

zanga	[zanga]	ridicule
muzoka	[muzoka]	big snake
bwizu	[βwizu]	grass

/S/ Phoneme has the following variants [s], [sj] and [hj] for class 5 nouns and verb radicals before vowel /i/ in C_1 position as in the following examples:-

isumo	[isumo]	[isjumo]	[ihjumo]	a spear
siba	[siβa]	[sjiβa]	[hjiβa]	whistle (verb)

similarly /z/ phoneme has the following variants: [z], [zj] and [ɦj] under the same phonological conditions as those for /S/ for example:-

izuba	[izuβa]	[izjuβa]	[iɦjuβa]	sun
zimba	[zimba]	[zjimba]	[ɦjimba]	swell

In the writer's own speech [S] and [hj] and [z] and [ɦj] are in free variation in the above mentioned conditions, while for other people all the variants listed above are dialectal pronunciations of the /S/ and /Z/ phonemes in the same phonological conditions.

Alveolar and palatal fricatives

There are three pairs of fricatives made in the region between the alveolus and the hard palate -[sj]and[zj], and [ʃ] and [ʒ] ,[hj] and [ɦj] which are dialectal pronunciations of the /hj/ and /ɦj/ phonemes. Basically each dialect uses a different pair, thus [sj]and [zj]tend to be associated with southern Tonga [hj]and[ɦj]with northern Tonga and[ʃ]and [ʒ] with both southern and northern Tonga which has had some influences from the neighbouring ILA Language to the West. However, this is an area of phonology in which great variety and overlapping exists. My own idiolect with influences from southern and west shows /hj/ and /ɦj/ with occasionally /ʃ/ in certain words as a variant of[hj,].

The variety and overlapping referred to aboye is sometimes reflected in the orthography. It is not uncommon to find the sounds [sj] , [hj] ,[ʃ] and[zj] , [ɦj] , [ʒ] represented orthographically as <sy>and <zy> respectively in one book, and as<sh> and <zh> in another. However, the Zambian Languages Orthography booklet, produced by the Ministry of Education in 1975 recommended the use of <sy> to represent the voiceless members of this group and <zy> , the voiced ones respectively.

/Sj/ and /Zj/ are essentially a sequence of an alveolar fricative and palatal Semivowel. The tongue is in a position for [s] or [z], from this position it is raised towards the hard palate to produce a j glide. Friction is produced in the alveolar region and is voiceless for /sj/ and voiced for /zj/.

These two sounds are dialectal variants of /hj/ and /ɦj/ and /s/ and /z/ in class 5 nouns and verb radicals in C_1 position, before vowel /i/. Examples of this have been cited under /s/ and /z/. /ʃ/ and /ʒ/ are palato-alveolar fricatives made by the front part of the tongue approaching the area between the teeth ridge and the hard palate. Friction is produced in the region between the hard palate and the alveolus and is voiceless for /ʃ/ and voiced for /ʒ/. These sounds are normally dialectal variants of /hj/ and /ɦj/, /sj/ and /zj/ and are used mainly in the western part of the Tonga speaking area. The shape of the lips for /ʃ/ and /ʒ/ is determined by the vowels which follow, normally it is spread for front vowels and rounded for back vowels. Both /ʃ/ and /ʒ/ can be followed by all vowels and they can occur in all positions. The following are such examples:

/ʃ/

syuumbwa	[ʃumbɣa]	lion
	[hjumbɣa]	lion
	[sjumbɣa]	lion
kusyanga	[kuʃaŋga]	to sow
	[kuhjaŋga]	to sow
	[kusjaŋga]	to sow

/ʒ/

zyana	[ʒana]	dance
	[ɦjana]	dance
	[zjana]	dance

/z/		
kuzyondola	[kuʒondola]	to give a
	[kuɦjondola]	love potion
	[kuzjondola]	to someone

/hj/ and /ɦj/ are palatal fricatives made by raising the front of the tongue till it is near the hard palate. The sound which results is accompanied by cavity friction and is voiceless for /hj/ and voiced for /ɦj/. The shape of the lips is conditioned by the following vowel, spread for front vowels and rounded for back vowels.

Both /hj/ and /ɦj/ can be followed by all vowels and they can occur in both positions as demonstrated below:-

	/hj/	/ɦj/	
-syupa	[hjupa]	-zyula	[ɦjula]
	be troublesome		up root
kusyanga	[kuhjaŋga]	kuzyingaila	[kuɦjiŋgaila]
	to sow		to roll up
kusyiima	[kuhjiːma]	-buzya	[βuɦja]
	to be sulky		ask

Velar fricatives:[4] Tonga has one velar fricative, voiced /ɣ/, which is absent in the writer's own speech, its place being taken by the velar plosive /k/. According to Ward and Westermann, a velar fricative is articulated by the back of the tongue near the velum or soft palate.

e.g.	kana	[ɣana]	a small child
	kala	[ɣala]	small intestine
	contrast		
	kkala	[kala]	sit down
	komana	[ɣomana]	get finished
	contrast		
	kkomana	[komana]	be happy.

Voiceless glottal fricative /h/ is produced by a sudden expulsion of air from the lungs. Friction occurs between the open vocal cords.

This is a sound mainly found in people's names in Tonga and in a few cases it functions as another variant of /hj/ /sj/ or /ʃ/. Its voiced counterpart /ɦ/ is even rarer, being found only in interjections. /h/ is found only in initial position and only front yowel /ə/ can come after it except in one isolated case shown below:-

/h/

haanene	[haanene]	grandfather
	[sjaanene]	grandfather
	[hjaanene]	grandfather
hena	[hena] }	question tag
	[sena] }	

/ɦ/

haneu [ɦaneu]

This is an expression used as a command to stop the oxen moving when ploughing.

hiiya [ɦiija]

This is used to express the sensation caused by cold water on one's body.

Nasals: In the formation of all kinds of nasal consonants, the air is prevented from going through the mouth by a stop at some point. The difference between one nasal consonant and another is in the point at which the mouth passage is stopped. There are four voiced nasal consonants in Tonga distinguised from each other by their place of articulation.

Bilabial nasal /m/: The mouth passage is stopped by the closure of the lips, the soft palate being lowered, the air goes out through the nasal cavity.

Alveolar nasal /n/: The tongue forms a closure with the teeth ridge and the soft palate is lowered allowing the air to go through the nose.

Palatal nasal /ɲ/: The mouth passage is stopped by the closure between the centre of the tongue and the hard palate. The soft palate being lowered, the air goes through the nose. In addition to the single palatal nasal sound /ɲ/, there is also a consonant cluster

n+j=/nj/ spelt in the same way as the single sound in Tonga orthography. The consonant cluster sound is rather rare and I can think of only two rather objectionable words in which it is used in free variation with the palatal nasal, viz:

Kunya	[kuɲa]	[kunja]	to empty one's bowels
nyo	[ɲo]	[njo]	male or female organ

Velar nasal /ŋ/: The mouth passage is stopped by the closure between the back of the tongue and the velum, the soft palate is lowered letting the air pass through the nose.

The bilabial, alveolar and palatal nasals can be followed by all vowels, but the velar nasal can only be followed by /a/, /o/ and /u/ but not by /i/ and /e/. The shape of the lips in all four nasals is determined by adjacent sounds, particularly by the following vowel, thus lips are spread when the following vowel is a front one and rounded for back vowels as follows:

/m/		
matama	[matama]	cheeks
munseme	[munseme]	mat
mizimo	[mizimo]	spirits
/n/		
- nana	[nana]	apply cream on body
- nika	[nika]	soap
- nununa	[nununa]	saye (life)
/ŋ/		
n handa	[ŋanda]	house
inhonzi	[ŋonzi]	sleep
inhunzu	[iŋunzu]	impetuosity
/ɲ/		
-nyamuka	[ɲamuka]	stand up
kunyema	[kuɲema]	to be angry
buunyu	[buuɲu]	meanness

Lateral consonants: Lateral consonants are made by stopping the air passage in the middle of the mouth and allowing it to go out on

both sides of the tongue. The position of the tip of the tongue determines their place of articulation, thus the tip of the tongue could be on the teeth ridge, teeth or hard palate giving an alveolar, dental or palatal lateral respectively.

There is one voiced alveolar lateral in Tonga, /l/. This sound is sometimes flapped /ɾ/ i.e., produced by the tip of the tongue making a single tap on the alveolar ridge, the side rims making a light contact with the upper molars. These two occur in free variation in the speech of some people. /l/ can be followed by all vowels and can occur in both positions as in the following examples:-

/l/

-lala	[lala]	lie down
mali	[mali]	money
lubono	[lubono]	wealth

Semivowels /j/ and /w/: Semi-vowels can be described as having characteristics of both a vowel and a consonant. Westermann and Ward state that a semi-vowel is an independent vowel glide in which the tongue starts from the position of a close or (half close) vowel such as /i/ /u/ (or /e/ /o/) and immediately moves to some more open position, i.e., to that of a vowel of greater sonority than itself. Thus /w/ is the semi-vowel beginning from the /u/ or /o/ position and /y/, the semi-vowel from the /i/ or /e/ position.

Tonga has both the palatal /j/ and labio-velar /w/ semi-vowels as shown in the following:

/j/

kuyaka	[kujaka]	build
-yeeka	[jeeka]	breath
-yumuna	[jumuna]	carry

/w/

-waala	[waala]	throw
mawezo	[mawezo]	shoulders
[illegible]we	[illegible]e]	[illegible]m

The semivowel /w/ has the allophones [ɣ], [x] and [ŋ] in the following environments:-

/w/ → [ɣ] / /β/, /b/	e.g.	ibbwe	[ibɣe] -	stone
		Mubwa	[muβɣa]	dog
/w/ → [x] / /P/	e.g.	kupwa	[kupxa]	a game
/w/ → [ŋ] / /m/	e.g.	Mwana	[mŋana]	a child

i.e. /w/ is realised as a voiced velar nasal after voiced bilabial nasal.

CONSONANTS WITH SPECIAL FEATURES

A number of Tonga consonants have additional features apart from those indicated in their description. The following consonants are designated as 'geminate' as well as 'reinforced', four from the plosive group, the affricate pair and the voiced alveolar fricative:

b d k g

tʃ dʒ

z

These consonants are considered 'geminate' because the duration of contact between the articulatory organs lasts longer during their production than it does for other consonants, 'reinforced', because the effort put into the production of these consonants is much greater than in other consonants.

Besides the above features, some consonants seem to be accompanied with additional breath during their production and this articulation is sometimes referred to as murmur or breathy voice. This has an effect upon the pitch of the previous syllable and so these consonants are also known as 'depressors'. The following are the consonants with this feature:

b d g

dʒ z ɦj ɦw

TONGA SINGLE CONSONANTS

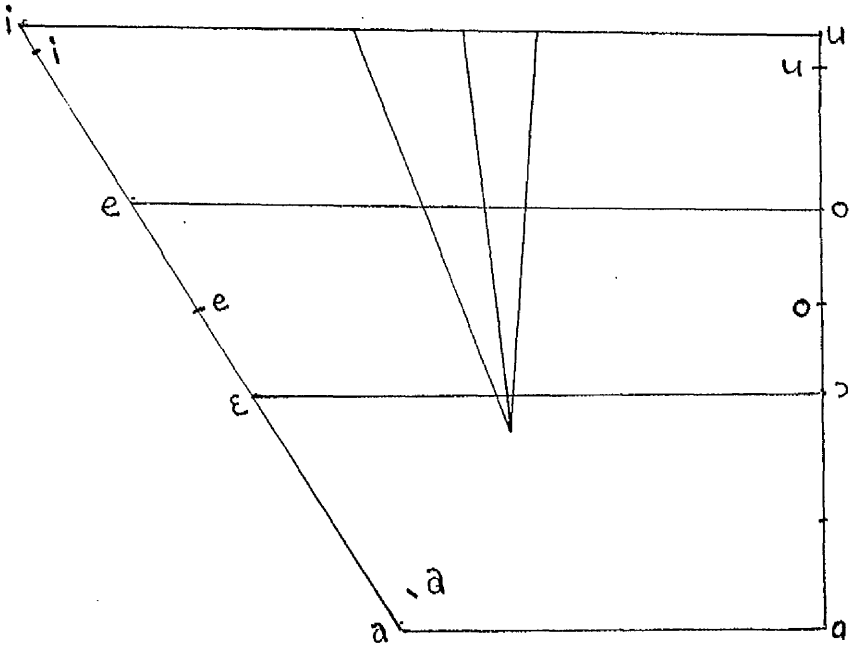
	Bilabial	Labio-dental	Dental	Alveolar	Palato-Alveolar	Alveolar-Palatal	Palatal	Velar	Labio-Velar	Glottal
Plosive	p b			t d			ʧ	k g		
Nasal	m			n			ɲ	ŋ		
Fricative	ɸ			s z	(ʃ) (ʒ)		hj ɦj	ɣ		
Affricative							ʧ ʤ		hʷ ɦʷ	ɦ
Lateral				l						
Flapped				(ɾ)						
Semi-vowel	w						j			

1) Note - /ʃ/ and /ʒ/ are dialectal variations of /hj/ and /ɦj/ - see page 12.

2) /ɾ/ is an allophone of /l/

iii. TONGA VOWELS

TONGA VOWELS IN RELATION TO CARDINAL VOWELS



There are five vowels in Tonga. There is no vowel length distinction as found in some languages, nor are there any diphthongs such as are found in English. Two adjacent vowel letters - same or different - represent different syllables + [j] or [w] glide between them.

e.g. [nti-jinga]
[tʃite-jente]
[suma ʃika]
[tatawula]

If the second vowel is /i/ or /e/, the glide is towards /j/, and if the second vowel is /o/ or /u/, then the glide is towards /w/ as

the following demonstrates:

Mateu	[matewu]	leaves
maunda	[mawunda]	heaps
muo	[muwo]	wind
mainza	[majinza]	rain season
inkoe	[iŋkoje]	eyelash

Tonga front vowel /i/: The front of the tongue is raised to close front position with lips spread. The muscles of the tongue are tense, while its sides make light contact with the upper molars. This Tonga vowel is slightly lower than the cardinal vowel [i] . /i/ occurs after all consonants except the velar plosives /k/,/g/ unless they are in a cluster with nasal /ŋ/ or in combination with a semi-vowel /w/.

Examples follow:

bbila	[bila]	sink, go out of view
yalila	[jalila]	spread for
gwitingana	[gwitiŋgana]	be busy
kwika	[kwika]	fit a handle onto
inkila	[iŋkila]	drown
angila	[aŋgila]	tie for

Tonga front vowel /e/: The front part of the tongue is raised to a position between half close and half open, the lips are spread and wider apart than for /i/. The quality is between that of cardinal vowels [e] and [ɛ]. This vowel occurs after every consonant except velar plosive /g/ unless it is in a cluster with semi-vowel /w/ or nasal /ŋ/.

The following are examples of this:

macece	[matʃetʃe]	childishness
-beja	[bedʒa]	lie
idelele	[idelele]	okra
mungenyu	[muŋgeɲu]	dip
gwenuna	[gwenuna]	open suddenly

Tonga front yowel /a/: The front part of the tongue is raised to an open position. The mouth is more open than for /e/ with considerable opening of the jaws. No contact is made between tongue and upper molars. The quality is near to that of cardinal vowel [a] but slightly retracted. This vowel occurs after all consonants as in the following examples:

inhanda	[iŋanda]	a house
-jala	[dʒala]	close
inyama	[iɲama]	meat
-sabila	[sabila]	make noise for

Tonga back yowel /o/: The back of the tongue is raised to a position between half close and half open with medium close lip rounding. No contact is made between sides of the tongue and the upper molars. The quality is between cardinal yowels [ɔ]and [o]. /o/ occurs after all consonants as in the following examples:

-gobola	[gobola]	chop
-fwooma	[hwooma]	hiss
-syonda	[hjonda]	crash
moomo	[moomo]	bone marrow

Tonga back yowel /u/: The back of the tongue is raised to a slightly less close position than for cardinal yowel [u]. There is slight contact between the tongue and the upper molars, and the lips are closely rounded. The quality is near to that of a slightly lowered cardinal yowel [u]. /u/ occurs after all consonants as in the following examples:

izuba	[izuba]	the sun
yanuna	[januna]	take washing off the line

mabuyu	[maβuju]	baobab fruit
inhunzu	[iŋunzu]	impetuosity

Nasalised yowels: It has been noted by Dr. Hazel Carter in her An outline of Tonga grammar page 7 that the language has nasalised yowels before certain consonants. Thus the combination ⟨mf⟩ → [m̃f̃] as in the word ⟨imfula⟩ is not a clustering of bilabial nasal /m/ and voiceless labio dental fricative /f/ , but a nasalisation of the preceding yowel /i/ and the fricative consonant /hw/ i.e., [ĩm̃f̃wula]. This means that any of the above described yowels can be nasalised if it precedes one of the nasalised consonants. For a full list of such consonants refer to page29.

Word-final yowels: There is a tendency for the yowels to have a more open quality at the end of the word than anywhere else. Perhaps the most striking example is in the following words where the yowel /u/ has strong [o] like character:

aboobu	[aβoobu̯]	and as such

/e/ has a strong [æ] like quality in the following:

ndime	[ndimæ̯]	it's me

/i/ has a strong [e] like quality in the following:

Simaubi	[simauβi̯]	name of a village

Yowel change: Yowels change regularly within a word and at word juncture. These changes take place when yowels are juxtaposed at morpheme boundaries, e.g., prefix + [illegible]stem, infinitive + v radical. The

following are some of the changes which take place:-

(i) i/u+V becomes Sv+VV - contraction to semi-vowel and doubling of vowel.

		Prefix stem	
i + a	yaa	mi-ayi	[mjaaji] yawns
		mi-aka	[mjaaka] years
		mi-anda	[mjaanda] hundreds
i + e	yee	mi-endo	[mjeendo] legs
		mi-ezi	[mjeezi] months
		infinitive + Radical	
		kuli-ela	[kuljeela] to measure oneself
i + o	yoo	kuli-olola	[kuljoolola] to stretch oneself
		kuli-onyaonya	[kuljoonjaonja] to feighn sleep
i + u	yuu	mi-unda	[mjuunda] fields
		mi-ungu	[mjuungu] pumpkins
		kuli-uma	[kuljuuma] to beat oneself
u + e	wee	ku-enda	[kweenda] to walk
		ku-ena	[kweena] to scrutinize
		bu-ele	[bweele] scabies
u + i	wii	ku-ita	[kwiita] to call
		lu-imbo	[lwiimbo] a song
		ku-ida	[kwiida] to get burnt (of meat)
u + a	waa	ku-anga	[kwaanga] to tie
		lu-ano	[lwaano] a story
		tu-ambo	[twaambo] sayings

ii) Regressive assimilation:-

u + o	oo	ku-ola	[koola] to cool
		mu-ofu	[moohwu] a blind person
a + o	oo	ba-ofu	[βoohwu] the blind
		(i) ba-ona	[βoona] the sleeping
a + e	ee	ba-enzu	[βeenzu] vistors
		ba-empa	[βeempa] they have learnt a lesson

An alternative analysis for what I have shown here as Regressive assimilation has been suggested, for u+o, this is on same basis as the previous one, Contraction to semi vowel + vowel doubling to - woo with subsequent deletion of the w i.e. u + o ⇒ woo - muwofu → moofu. The assimilation approach however seems simpler (one-step process) and perhaps justifiable in view of the unambiguous assimilation for a+o, a+e.

It should be remembered that as stated on page 16 two vowels form the nuclues of two distinct syllables.

iv. Syllable structure

The following syllabic structural patterns are found in Tonga:

V	u	-	you
	uli	-	you are
CV	pee	-	no
CCV	jwi	-	word
	mpu	-	boil
CCCV	ndyu	-	a type of mushroom
	nswi	-	fish

Clustering is limited to the patterns described on page 17. There are no long vowels in Tonga as noted on page 20, the word naa - whether consists of 2 syllables. Non-phonemic lengthening may occur in shouting e.g.

-Koboola!	-	come!
but		
Koboola-a		come! (shouted)

and in some ideophones:

Kumuna kuti wi-i-i!	-	being absolutely silent.
Kutontola kuti siko-o-o		being freezing cold. But these are

restricted contexts, and in consequence the pattern CV: is not classed as a basic structure.

As shown by the examples, monosyllabic words are permitted in Tonga, but there are no 'closed syllables' i.e. ending with a consonant. Syllabic segmentation of polysyllabic words will always result in open syllables e.g.

i)	i-ndya	-	glutton
ii)	i-mpa-nda	-	forked stick
iii)	i-mpwi-zyi	-	a cow
iv)	i-ndo-ngwe	-	groundnuts
v)	nda-ka-mwi-i mbila	-	I sang for him
vi)	ku-dwa-nta-u-ka	-	to jump about

This constitutes one of the major differences between Tonga and English phonology.

ii CONSONANT CLUSTERS IN TONGA

Certain phonemes show special allophones in the environment of preceding nasal. In present Tonga spelling, these are not always distinguished, but will be indicated by graphemes containing ⟨h⟩ in the present work.

The following clusters are permitted in Tonga phonology:-

i) nasal consonant - N C

ii) nasal consonant Semivowel - N CSV

iii) consonant semi Vowel - CSV

In the N C and N C S V combination the nasal is generally homorganic to the consonant i.e. both nasal and consonant have the same place of articulation.

Examples

Phonemic Representation	Phonetic manifestation	Grapheme	Word		
/mp/	[mp]	⟨mp⟩	mpako	[mpako]	a cave
			kulampa	[kulampa]	to be tall
			mpande	[mpande]	(from verb - panda) Let me shape.
/mβ/	[mb]	⟨mb⟩	mbaambi	[mbaambi]	an antelope
			mumbu	[mumbu]	a type of wild berry
			mbale	[mbale]	(from verb - bala) Let me read.
/mb/	[mb]	⟨mbh⟩	Imbhangilo	[imbaŋgilo]	Loin cloth
			mbhale	[mbale]	(from verb - bbala) Let me put (child) on my back.
/nt/	[nt]	⟨nt⟩	intipa	[intipa]	a knife
			kutunta	[kutunta]	to empty.

Phonemic Representation	Phonetic manifestation	Grapheme
/nd/	[nd]	<nd>
/nl/	[nd]	<nd>
/nd/	[nd]	<ndh>
/ŋk/	[ŋk]	<nk>
/ŋg/	[ŋg]	<ng>
/ŋ+ back vowel/	[ŋg]	
/ŋg/	[ŋg]	
/ntʃ/	[ntʃ]	
/ɲdʒ/	[ɲdʒ]	<nj>
/ɲ+ front vowel/	[ɲdʒ]	

Word		
ntente	[ntente]	(from verb - tenta) Let me burn.
induba	[induβa]	a type of a bird
intunda	[intundə]	a hump
ndile	[ndile]	(from verb - lila) Let me cry
indhudwa	[indudwə]	a Giraffe
ndhyaamane	[ndjaamane]	(from verb - dyaamana) Let me stand astride.
nkanga	[ŋkängga]	a guinea fowl
mucinko	[mutʃiŋko]	a kind of traditional dance
nkande	[ŋkande]	(from verb - kanda) Let me massage
munhanga	[muŋaŋgə]	a witch doctor
kaṣanga	[kasaŋgə]	a stick of (match)
ngule	[ŋgule]	(from verb - ula) Let me buy.
ngone	[ŋgone]	(from verb - ona) Let me sleep
inghoogo	[iŋgoogo]	kernel of fruit
nghaye	[ŋgəje]	(from verb - gaya) Let me grind
mancenga	[mə	squint eyes.
ncili	[ntʃili]	Mortar
njila	[ɲdʒilə]	get in
mwanja	[mŋandʒə]	cassava
njeleke	[ndʒeleke]	(from verb - elaka) Let me measure.

Phonemic Representation	Phonetic manifestation	Grapheme	Word		
/ɲʤ/	[ɲʤ]	<njh>	njhaye	[ɲʤaje]	(from verb - jaya) Let me kill
			njhule	[ɲʤule]	(from verb - jula) Let me open
/ns/	[ns]	<ns>	munsi	[munsi]	pounding stick
			insaku	[insaku]	weeds.
			nsale	[nsale]	(from verb - sala) Let me choose
/nz/	[nz]	<nz>	nzoka	[nzoka]	a snake
			cisanza	[ʧisanza]	barn
			nzuze	[nzuze]	(from verb - zuza) Let me run.
/nsj/	[nsj] or [ñj]	<nsy>	insya	[insja]	buck
			nsye	[nsje]	(from verb - sya) Let me dig
		<nsy>	insya	or [ĩñja]	buck
			nsye	[ñje]	(from verb - sya) Let me dig.
/nzj/	[nzj] or [ñj]	<nzy>	musonzyi	[musonzji]	a witch doctor.
				or [musoñji]	
			nzyane	[nzjane]	(from verb - zyana) Let me dance
				or [ñjane]	
/mhw/	[m̃w]	<mfw>	imfwafwi	[ĩm̃wãhwi]	something short
			mfwume	[m̃wume]	(from verb - fwuma) Let me be early
/mɦw/	[m̃w]	<mvw>	imvwi	[ĩm̃wi]	grey hair
			mvwe	[m̃we]	(from verb - mvwa) Let me hear.

ii) NCSV

Phonemic Representation	Phonetic manifestation	Grapheme	Word		
/mpw/	[mpx]	<mpw>	impwizyi	[impxiɦji]	heifer
			mpwe	[mpxe]	(from verb - pwa) a type of game played mainly by girls.
/mpy/	[mpj]	<mpy>	impya	[impjə]	something new
			mpye	[mpje]	(from verb - pya) Let me burn
/mbw/	[mbɣ]	<mbw>	cimbwali	[tʃimbɣali]	sweet potatoes
/mby/	[mbj]	<mby>	gambya	[gambjə]	astonish
/mbwʲ/	[mb̤ɣ]	<mbhw>	mbhwantuke	[mb̤ɣantuke]	(from verb - bwantuka) Let me jump
/mbj/	[mb̤j]	<mbhy>	mbhye	[mb̤je]	(from verb - bya) Let me berp
/ntw/	[ntw]	<ntw>	ntwana	[ntwana]	It is the little children
			ntwange	[ntwaŋge]	(from verb - twanga) Let me boast.
/nty/	[ntj]	<nty>	ntyanke	[ntjaŋke]	(from verb - tyanka) Let me squeeze.
/ndw/	[ndw]	<ndw>	indwa	[indwə]	be defeated
/ndwʲ/	[nd̤w]	<ndhw>	ndhwante	[nd̤wante]	(from verb - dwanta) Let me trot
/ndy/	[ndj]	<ndy>	indyu	[indju]	a type of mushroom
/ndyʲ/	[nd̤j]	<ndj>	ndyabbuke	[nd̤jəb̤uke]	(from verb - dyabbuka) Let me tread

Phonemic Representation	Phonetic manifestation	Grapheme	Word		
/ŋkw/	[ŋkw]	<nkw>	musankwa	[musaŋkwa]	a boy
			nkwate	[ŋkwate]	(from verb - kwata) let me marry.
/ŋgw/	[ŋgw]	<ngw>	ngwasye	[ŋgwaɦje]	(from verb - wasya) let me wash.
/ŋgʷ/	[ŋgʷ]	<nghw>	nghwasye	[ŋgwahje]	(from verb - gwasya) let me help.
/nsw/	[nsw]	<nsw>	inswi	[inswi]	fish
/nsj/	[ ]				see page 29.
/nzw/	[nzw]	<nzw>	inzwanga	[inzwaŋgə]	argumentativeness.
/nzj/					see page 29.

iii) CSV

/pw/	[px]	< pw >	-pwaya	[pxaja]	destroy
/pj/	[pj]	< py >	-pya	[pja]	burn
/βw/	[βɣ]	<bw>	-mubwa	[muβɣa]	a dog
/βj/	[βj]	< by >	ubyaubya	[uβjauβjə]	lighten (burden)
/ɓj/	[ɓj]	<bhj>	kubhya	[kuɓja]	to belch
/tw/	[tw]	<tw>	kutwe	[kutwe]	an ear
/tj/	[tj]	<ty>	kutyola	[kutjola]	to break
/dw/	[dw]	<dhw>	ludhweba	[luɗweβə]	a whistle
/dj/	[dj]	<dhy>	kudhyaamana	[kuɗjaamana]	to stand astride
/kw/	[kw]	<kw>	-kwela	[kwela]	pull

Phonemic Representation	Phonetic manifestation	Grapheme	Word		
/gw/	[gw]	<ghw>	-mughwaghwa	[mugwagwa]	a road
/tʃw/	[tʃw]	<cw>	cwemba	[tʃwemβa]	make a shrill noise
/dʒw/	[dʒw]	<jw>	mujwa	[mudʒwa]	nephew
/mw/	[mŋ]	<mw>	mwana	[mŋãna]	a child
/mj/	[mj]	<my>	myaaka	[mjãːka]	years
/nw/	[nw]	<nw>	munwe	[munwe]	a finger
/nj/	[nj]	<ny>	kunya	[kunjã]	to empty one's bowels.
/ɲw/	[ɲw]	<nyw>	kunywa	[kuɲwa]	to drink
/lw/	[lw]	<lw>	lweenge	[lweenge]	the sea
/lj/	[lj]	<ly>	kulya	[kulja]	to eat.
/sw/	[sw]	<sw>	kuswena	[kuswenã]	to move nearer
/sj/	[sj]	<sy>	isyokwe	[isjokwe]	a thicket
/zw/	[zw]	<zw>	izwi	[izwi]	voice
/zj/	[zj]	<zy>	kuzyala	[kuzjala]	to bear

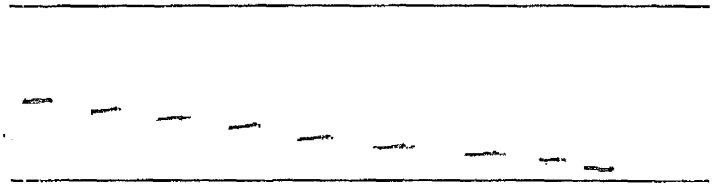
iv. SUPRASEGMENTAL FEATURES OF TONGA

Languages use variations of pitch in different ways. The use made of pitch in tone languages of which Tonga is one, is unlike that of languages like English which are intonational. Pike defines a tone language as one "having lexically significant, contrastive but relative pitch on each syllable."[6] Pitch is lexically and grammatically significant in a language if the meaning of words or their grammatical function is distinguished solely by its distinctive use within them. It is contrastive but relative because the tonemic nature of each syllable can only be determined by contrasting it with the surrounding syllables ie the tone of a syllable can be described as high only if the tone of syllables immediately around it is low in relation to it and vice versa.

In Tonga tone is determined by whether a vowel is uttered with a high or low pitch in comparison with the surrounding vowels. Basically two tones are needed to describe the tonal system of Tonga, these are high and low tones, but within the system of these two basic tones there is a variety of junctural features. For instance, in some contexts a vowel is both higher in pitch than what follows and lower than what precedes it as in the following item: basinkondo; warriors. The -si- in this item is lower in pitch than ba- and higher than -nko-. This is called slipped high tone. In other contexts there is a successive lowering of tones within a sentence as in the following:

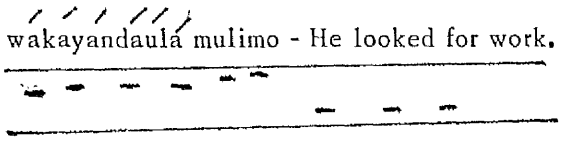
Twakali kubeleka jilo

We were working yesterday



The feature is known as downdrift and it is a characteristic feature of the Tonga sentence. What happens in a down drift sentence is that the mean pitch level throughout the sentence falls so that both high and low tones at the beginning of a sentence are higher than they are at the end of it.

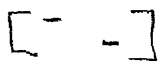
At times the opposite happens, and a sequence of high tones may become progressively higher in pitch as follows:



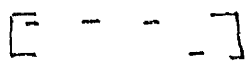
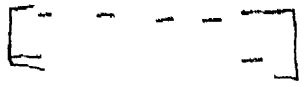
This feature is called crescendo.

According to Pike, each syllable in a tone language has pitch as fully basic (inherent) to the words in which it occurs as [p] [t] [f] are inherent in the following English words: pie, time, wife, but just as [f] in wife changes to [v] wives, similarly some of the tonemes may be replaced by others in the grammar of tone languages. This seems to be the case in Tonga where each individual item has a limited number of tone patterns of its own, the occurrence of which is determined by a given context. Below is an illustration of variation of tone patterns in some lexical items. The following lexical items have the basic

tone patterns shown below:

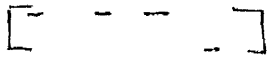
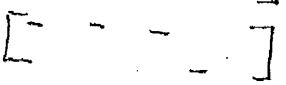
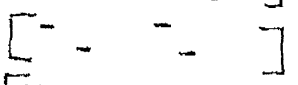
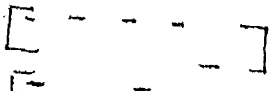
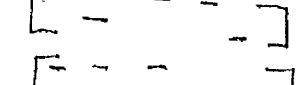
bowa		mushrooms
nhánda		a house
mucembele		an old woman

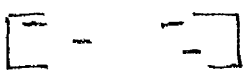
But the patterns change in the combinations shown below:

bówanhánda		a type of mushroom
nhándambotu		a fine house
múcembelema		a comrade in old age

Tone and depressor consonants: We have indicated in the chapter on Tonga phonetics that there exists in Tonga a group of consonants which are not only never pronounced on a high pitch, but they also have a lowering effect on the tone of the preceding syllable and for this reason they have been designated depressor consonants for

a full list of them see page 18.

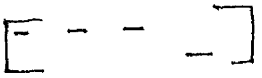
1)		úúseka		he who laughs
2)	but	úújaya		he who kills
3)		íbasonda		they who divine
4)	but	íbazyana		they who dance
5)		íituba		the one which is white
6)	but	íibbubba		the one which struggles
7)		óonyemena		you, who are angry with
8)	but	óodedema		you, who are hoarse
9)		nótuyala		we who spread

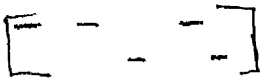
10) but notugaya  we who grind

11) icisiya  the one which is black

12) but icizuza  the one which runs

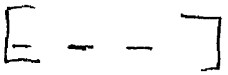
Constraints: for V preceding C to be lowered, there must be preceding and following V. (Note non-effect of bb_2, d_2 and z_2 in 6, 8 & 12 above.)

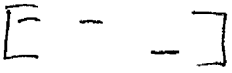
ibeenzu  visitors

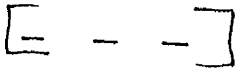
but ibeenzuma  my friends

Tone is lexically significant in Tonga as the following lexical items show:-

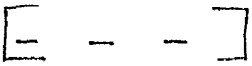
maumba  maggots

maumba  butter

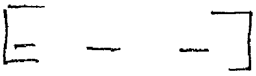
maanda  houses

maanda  graveyard

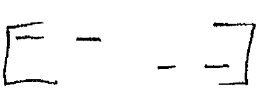
musuku  horn used for healing purposes

musuku  a musuku tree

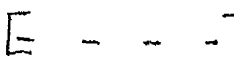
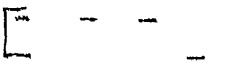
makoko  types of beer

makoko  self seeded crop

Tone is grammatically significant as the following show:-

bamubona  they have seen him

bamubona  they have seen you

wábona		he has seen
wabóna		you have seen
twabóna		we have seen
twábona		the little ones have seen
twábóna		when we have seen
nindabona		had I seen
nindabona		I should have seen
nindábóna		when I saw

To make a complete analysis of the grammatical significance of tone in Tonga would involve going into the morphotonology[7] of the language which is beyond the scope of of the present study. For our purposes it is enough to remember the lexical basis of the system ie the fact that each lexical item has a basic underlying tone pattern of its own which never changes but is realized differently in certain contexts, and the surface concept of downdrift.

STRESS: In Tonga stress is found whenever a high tone comes before a low tone, or a pause. The syllable on which the high tone falls is stressed. In the following word Músímbi the -si- which comes immediately before the syllable -mbi with a low tone, is stressed. This stress pattern however has no grammatical or lexical significance whatsoever. There is a possibility of the existence of another stress pattern in Tonga which might have a grammatical significance. It is possible that stress replaces high tone in certain contexts. For instance the 2nd and 3rd person plural diminutive have similar subject prefixes ie -w- for 2nd and 3rd person

singular, tu-tw- for 1st person plural and 3rd person plural diminutive. The similarity in subject prefixes poses no problem when the verb which follows them belong to the high tone group.[8]

It is easy to tell which person is being referred to by the shift of the high tone from one syllable in one context to another in the other, but when a verb from a low tone group follows, stress alone seems to mark the distinction: eg.

wásiba	[‾ – –]	he has whistled
wasiba	[– ‾ –]	you have whistled
twásiba	[‾ – –]	the little ones have whistled
twasíba	[– ‾ –]	we have whistled

(The stressed syllable is represented by a dot:)

But:-

wȧsika	[• – –]	he has arrived
wasȧka	[– • –]	you have arrived
twȧsika	[• – –]	the little ones have arrived
twasȧka	[– • –]	we have arrived

Apart from this, stress does not seem to play an important part in the Tonga language as tone does. Whatever stress there is, seems to be bound to tone; otherwise all syllables tend to be evenly stressed in Tonga, that is each syllable tends to be uttered with the same degree of force. Furthermore, each syllable is uttered at roughly the same interval ie takesabout the same amount of time to say. For these reasons Tonga is said to be a syllable timed language as opposed to English which is a stress timed language.

CHAPTER 3

A DESCRIPTION OF ENGLISH SOUNDS

i) CONSONANTS

The English consonantal model used in this chapter is that of Gimson's Introduction to the pronunciation of English.

English has twenty-four single consonantal phonemes which can be divided into two general categories:

A. Obstruents: This group is composed of articulations which involve an obstruction of the air stream. These include plosives, affricates and fricatives. In this group there is also a distinctive opposition between fortis and lenis, of which more will be said later.

OBSTRUENTS

p	b					t	d			k	g		
		f	v	θ	ð	s	z	ʃ	ʒ	tʃ	dʒ		h

Plosives: There are three stages involved in the production of a plosive sound: a) closure during which the air is imprisoned at one point or another in the vocal tract by the articulatory organs coming together thereby forming an obstruction; b) hold, the period during which the air is held back before the articulatory organs separate to let it escape and; c) release, during which the organs forming the obstruction part rapidly, allowing the imprisoned air to escape. As the air rushes out it makes an explosive sound.

English has three pairs of plosive sounds: bilabial: /p,b/, alveolar: /t,d/ and velar: /k,g/. The following words show their occurrence in initial medial and final positions.

/p/		/b/	
pill	[pɪl]	bill	[bɪl]
rapid	[ræpɪd]	rabid	[ræbɪd]
rip	[rɪp]	rib	[rɪb]
/t		/d/	
till	[tɪl]	dill	[dɪl]
floating	[flǝʊtɪŋ]	loading	[lǝʊdɪŋ]
writ	[rɪt]	rid	[rɪd]
/k/		/g/	
kill	[kɪl]	gill	[gɪl]
racket	[rækɪt]	ragged	[rægɪd]
rick	[rɪk]	rig	[rɪg]

The voiceless plosives /p,t,k/: The effort and muscular energy put in the pronunciation of these sounds is much greater than in their voiced counterparts, for this reason the voiceless plosives are said to belong to the 'fortis' and the voiced to the 'lenis' series. The fortis series are usually accompanied by aspiration when initial in a stressed syllable. When in initial position /p,t,k/ are distinguished from /b,d,g/ mainly through the presence of aspiration in the fortis series, rather than the presence of voice in the lenis series.

When the fortis series precede a vowel in an unstressed syllable, and in final position, what aspiration there is, is relatively weak - infact in final position there may not be any audible release of the plosive at all, for example:

potato [pǝteɪtǝʊ]

police [pǝliːs]

pollute	[pəlut]
tomato	[təmɑːtəʊ]
today	[tədeɪ]
together	[təgɛðə]
collect	[kəlɛkt]
collide	[kəlaɪd]
combine	[kəmbaɪn]
top	[tɒp]
pot	[pɒt]
pock	[pɒk]

When a fortis consonant is preceded by /s/ there is no aspiration even when the syllable is strongly accentuated:

sport	[spɔːt]
stork	[stɔːk]
scorn	[skɔːn]

Voiced plosives: Lenis series tend to be pronounced with less muscular energy and breath effort than the fortis series. In initial and final positions, the lenis series may be only partially voiced and like the fortis series, there may not be any audible release in final position. The main distinguishing factor between the two series in this position is the length of the syllable which they close and not the voicing factor. Syllables closed by the fortis consonants are much shorter than those closed by the lenis.

INITIALLY-PARTIALLY VOICED:

big	[bɪg]	boast	[bəʊst]	brain	[breɪn]
dog	[dɒg]	date	[deɪt]	dry	[draɪ]
gone	[gɒɑ]	goat	[gəʊt]	great	[greɪt]

NO AUDIBLE RELEASE IN FINAL POSITIONS:-

tab	[tæb]	slab	[slæb]	sob	[sɒb]
sad	[sæd]	road	[rəʊd]	bed	[bɛd]
tag	[tæg]	slag	[slæg]	rogue	[rəʊg]

Medially, following an accentuated syllable the lenis series are voiced, and the voicing feature tends to be the main contrastive element between the two series in this position: e.g.

husband	['hʌzbənd]	harbour	['haːbə]	rubber	['rʌbə]
ladder	['lædə]	adorn	[ə'dɔːn]	order	[ɔːdə]
agony	['ægənɪ]	begin	[bɪ'gɪn]	eager	['iːgə]

In a cluster of two stops - plosive plosive or affricate, either within a word or at word juncture, the first plosive normally has no audible release, and this applies to both the fortis and lenis series as in the following examples:

dropped	/p/+/t/	[drɒpt]
rubbed	/b/+/d/	[rʌbd]
object	/b/+/dʒ/	[ɔbdʒɛkt]
good job	/d/+/dʒ/	[gʊddʒɒb]

Affricates: For a description of how affricate sounds are made see p. 8 . There are two palato-alveolar affricates in R.P. One belonging to the lenis series and one to the fortis series . The post alveolar affricates /tr/ and /dr/ cannot be regarded as phonemic entities as their occurrence is restricted mainly to the initial position in a word.

The English affricates are produced by a closure to the air stream between the tip, blade and rim of the tongue and the upper alveolar ridge. At the same time the front of the tongue is raised towards the hard palate in readiness for the fricative release.

Affricates share most of the features of R.P. plosives, the fortis /tʃ/ has the same effect of shortening the syllable which it closes as the plosives in the fortis series and it is also subject to aspiration in initial position, while /dʒ/ lengthens the syllable as the plosives in the lenis series and this is the primary distinctive feature of /tʃ/, and /dʒ/ in this position.

Secondly /dʒ/ shares the feature of partial voicing in initial and final positions as has been noted in the voiced plosives. The following words show the affricates in initial, medial and final positions:

/tʃ/

chap [tʃæp] butcher [bʊtʃə] patch [pætʃ]

/dʒ/

jam [dʒæm] aged [eɪdʒɪd] badge [bædʒ]

Fricatives are produced by two organs of speech coming relatively close together causing the escaping air stream to produce friction. Fricatives are therefore like plosives in that their production is accompanied by a noise component. The friction may or may not be accompanied by voice.

The R.P. fricatives comprise four pairs:- /f, v/, /θ, ð/, /s, z/, /ʃ, ʒ/, which can be distinguished from each other by the following phonetic features:

a) place of articulation: /f,v/ – Labio-dental,

/θ, ð/ - dental /s,z/ alveolar,

/ʃ, ʒ/ palato-alveolar - /h/ - glottal

b) force of articulation - like the plosives and affricates, the fricatives can be divided into the fortis and lenis series. Hence /f, θ, s, ʃ/ which belong to the fortis series tend to be pronounced with more muscular energy and stronger breath force than /v, ð, z, ʒ/ which belong to the lenis series.

c) Like the lenis plosives and affricates, the lenis fricatives tend to be fully voiced only when they occur between voiced sounds such as:

over [əʊvə] easy [i:zi]

pleasure [plɛʒə] other [ʌðə]

In initial and especially in final positions the lenis fricatives may only be partially voiced or completely voiceless such as:

leave [li:v] breathe [bri:ð]

peas [pi:z] rouge [ru:ʒ]

The fortis fricatives are voiceless in all positions.

/h/ is voiceless in initial positions but may have some voicing in medial position between voiced sounds such as:

behind [bɪɦaɪnd] behave [bɪɦeɪv]

/h/ does not occur in final position.

d) Again like the plosives and affricates, when both the lenis and fortis fricatives occur in final position their value is determined by the length of the syllables they close since the voicing factor is not strongly operative in this position, thus the syllables closed by the lenis series tend to be much longer than those closed by the fortis. This is particularly audible when the preceding vowel is a long one or diphthong as in:

proof	[pru:f]	prove	[pru:v]
loth	[ləʊθ]	loathe	[ləʊð]
race	[reɪs]	raise	[reɪz]

The following words illustrate the occurrence of fricatives in initial, medial and final positions:

/f/

fast	[fa:st]	wafer	[weɪfə]	leaf	[li:f]

/v/

vast	[va:st]	waver	[weɪvə]	leave	[li:v]

/θ/

thigh	[θaɪ]	ether	[i:θə]	wreath	[ri:θ]

/ð/					
thy	[ðaɪ]	either	[aɪðə]	wreathe	[ri:ð]
/s/					
sink	[sɪŋk]	sorcerer	[sɔ:sərə]	sauce	[sɔ:s]
/z/					
zinc	[zɪŋk	razor	[reɪzə]	raise	[reɪz]
sheet	[ʃi:t]	mission	[mɪʃn]	leash	[li:ʃ]
/ʒ/	—	vision	[vɪʒn]	rouge	[ru:ʒ]
/h/					
heat	[hi:t]	behold	[bɪhəʊld]		

B. Nasals, Laterals and Frictionless Continuants:

This second category includes those articulations in which there is only a partial closure or an unimpeded oral or nasal escape of air. These sounds are usually all voiced and frictionless

m n ŋ

w l r j

Nasal consonants are formed by stopping the air from going out through the mouth. The soft palate is lowered making it possible for the air to go through the nose. There are three nasal consonants in R.P. English whose places of articulation correspond to the three oral plosives. These are: bilabial /m/, alveolar /n/ and velar /ŋ/.

The following is their occurrence in initial, medial and final positions:

bilabial /m/

meet	[mi:t]	man	[mæn]	may	[meɪ]
army	[a:mɪ]	summer	[sʌmə]	swimming	[swɪmɪŋ]
lame	[leɪm]	seam	[si:m]	ham	[hæm]

alveolar /n/

name	[neɪm]	know	[nəʊ]	net	[net]
many	[mɛnɪ]	miner	[maɪnə]	minute	[mɪnɪt]
moon	[mu:n]	pan	[pæn]	down	[daʊn]

velar /ŋ/ does not occur initially in a word, but it does medially and in final positions:-

songs	[sɒŋz]	longed	[lɒŋd]	hanger	[hæŋə]
thing	[θɪŋ]	running	[rʌnɪŋ]	swing	[swɪŋ]

The vocalic nature of nasals is emphasized by the fact that they are often employed to perform the syllabic function of vowels in certain cases. The alveolar nasal /n/ is the most frequently used for this purpose as in the following examples:

mutton [mʌtn] kitten [kɪtn] Britain [brɪtn] sudden [sʌdn]

Syllabic /m/ is not as common as syllabic /n/ but it also occurs in such words as:-

rhythm [rɪðm] schism [sɪzm] prism [prɪzm]

/ŋ/ appears in a syllabic situation with some speakers in the pronunciation of the word - bacon - [beɪkŋ] otherwise it does not seem to appear anywhere else.

Laterals: Lateral consonants are made by partially closing the middle of the mouth and allowing the air to go out on both sides of the tongue. The position of the tip of the tongue could be on the teeth ridge, teeth or hard palate, giving us an alveolar, dental or palatal lateral respectively. There is only one alveolar lateral in English /l/. It has three main allophones ie clear [l] voiceless [l̥] and dark [ɫ]. The following is their distribution in various positions

a) :-

initial

live [lɪv] late [leɪt] learn [lɜ:n]

medial

silly [sɪlɪ] sailing [seɪlɪŋ] colour [kʌlə]

word final, intervocalic in contexts:

pull it [pʊlɪt] fool around [fu:ləraʊnd] kill it [kɪlɪt]

b) [l̥]

plain [pleɪn] clay [kleɪ]

c) [ɫ]

word final after vowel:

pull [pʊɫ] sill [sɪɫ] oil [ɔɪɫ]

after vowel - before consonant:-

cold [kəʊɫd] sold [səʊɫd] salt [sɔɫt]

Dark [ɫ] also often performs a syllabic function as in the following words:

bottle [bɒtɫ] cattle [kʀtɫ] sickle [sɪkɫ]

Frictionless continuant: English has only one voiced post-alveolar frictionless continuant phoneme /r/. This is produced by the tip of the tongue against the back part of the teeth ridge, the central part of the tongue is kept low, while there is general contraction of the tongue giving a hollowing effect to the tongue position and a retroflexion of the tip. The following is its occurrence in word initial, medial and final-linking with an initial vowel in the following words:

initial

run [rʌn] rain [reɪn] red [red]

medial

rural [rʊrət] heroin [herəʊɪn] direct [dɪrɛkt]

word final-linking with an initial vowel in the following words:

far away [fa:rəweɪ] more and more [mɔ:r ən mɔ:] there and then [ðɛər ən ðɛn]

following fortis accented plosive

trice [tɬaɪs] pray [pɬeɪ] cry [kɬaɪ]

Following fortis fricative, unaccented fortis plosive or accented fortis plosive preceded by /s/ in same syllable /r/ slightly devoiced

e.g.

frail [fleɪɫ] befriend [brfɬend] approach [əpləʊɹtʃ]

nitrate [naɪtɹeɪt] cockroach [kɒkɹaʊtʃ]

spring [spɹɪŋ] scream [skɹiːm] screen [skɹiːn]

Following lenis consonant = [ɹ] but fricative after /d/

e.g break [bɹeɪk] grass [gɹaːs]

but - drum [dɹʌm] dry [dɹaɪ]

Both Gimson and Jones have observed that /r/ = [ɻ] for many R.P. Speakers in unstressed intervocalic position. e.g

verry [vɛɻɪ] sorry [sɒɻɪ] period [pɪəɻɪəd]

Semivowels: English has two semivowels, palatal semivowel /j/ and labio-velar semivowel /w/. Semivowelsare made by the movement of the tongue from the position of a close or half close vowel to a more open position ie to that of a vowel of a greater sonority. Thus the tongue movement for the palatal semivowel /j/ starts approximately from position /i:/ (with spread or neutral lips) and for /w/ from /u:/ (with rounded lips)moving away immediately to the position of the following sound as demonstrated in the following examples:

/j/

word initial:

yet [jɛt] your [jɔː] yeast [jiːst]

When /j/ follows a fortis plosive there is some slight devoicing if the plosive is in an unaccented syllable. Slight devoicing also takes place when /j/ follows

/sp, st, sk/ and fortis fricatives. The devoicing phenomenon becomes more obvious when /j/ follows a fortis consonant and /h/ in an accented syllable before /u:,/ resulting in a fortis palatal fricative [ɕ] being produced. Examples following:-

sputum	student	askew
[spju:təm]	[stju:dnt]	[əskju:]

following fortis fricatives:

fumes	enthusiasm	suit
[fju:mz]	[ɪnθju:zɪæzm]	[sju:t]

following accented /p,t,k,h/ before /u:, əʊ/:-

pure	tune	secure	hue
[pɕʊə]	[tɕu:n]	[sɪkɕʊə]	[hɕu:]

/w/

word initial:

weed	[wi:d]
wax	[wæks]
work	[wɜ:k]

As in the palatal semivowel /j/ there is some slight devoicing when /w/ follows a fortis consonant in an unaccented syllable, /sk/, or an accented fortis fricative. The devoicing is complete when /w/ follows an accented /t,k/.

Consonants preceding /w/ especially initially , accented syllables, will be lip rounded in anticipation of /w/.

Gimson noted that among careful R.P. speakers and some regional dialects of English, words spelt with wh - are pronounced with /hw/ or with a fortis voiceless labio-velar fricative [ʍ] and in such speech where there is oppositions between such words as witch and which, [ʍ] has a phonemic status. However among many R.P. speakers, particularly men the use of [ʍ] has declined.

Examples:

following /sk/:-	square	[skʷɛə]
following fortis fricative:	thwart	[θʷɔ:t]
following unaccented /p,t,k/	outwork	['aʊtwɜ:k]
following accented /t,k,/	twist	['tʷɪst]
	twenty	['tʷɛntɪ]
	queen	['kʷi:n]
	quarrel	['kʷɒrəl]
possible oppositions between /w/ and /hw, /	witch	[wɪtʃ]
	which	[hwɪtʃ] [ʍɪtʃ]
	weather	['wɛðə]
	whether	['hwɛðə] ['ʍɛðə]

ii Syllable Structure of English

English has a large number of possible syllable structures. The following are only some of the possible structures:-

i)	VV	[ˈaɪ]	eye
	VC	[æd]	add
	VCC	[ælb]	alb
	VCCC	[ˈʌŋkl]	uncle

ii)	CVV	[sɘv]	sew
	CVC	[pʊt]	put
	CVCC	[bæend]	band
	CVCCC	[tɛnts]	tents
iii)	CCVV	[klɛɪ]	clay
	CCVC	[grɪp]	grip
	CCVCC	[stæend]	stand
	CCVCCC	[slʌmps]	slumps
iv)	CCCVC	[strɪp]	strip
	CCCVVC	[streit]	straight
	CCCVCC	[strɪŋz]	strings

There are 24 single phonemes as indicated on page 39. Of these, 22 can be found in initial position, while /ŋ/ and /ʒ/ cannot be initial. The following can occur as second place consonants l, r, w j (and only after s) - p t k m n. l, r, w, j can also occur as third place consonants (after sp, st, sk, sm, sn, sl.) The following consonants occur only in immediately pre-vocalic position /r/, /ɹ/, /tʃ/, /dʒ/, /w/ /j/ of these /ɹ/, /tʃ/ and /dʒ/ can only occur simple. Consonant clusters are found in syllable initial and syllable final position. Clusters of two and three consonants can occur in syllable initial and of two, three, and four consonants in syllable final position. There are however restrictions on the consonants which can occur together in a cluster. For instance a consonant

cluster of three in syllable initial position will always have /S/ as the first element. E.g. scream [skri:m] If the second consonant of a syllable initial consonant cluster is a plosive, then the first consonant must be /S/ e.g spot [spɒt] .

The consonant following a plosive in an initial consonant cluster is either /r/, /w/, /j/ or /l/ with consonant cluster in final position, if the last consonant of a consonant cluster is /s/, the preceding consonant is either voiceless or /n/ or /l/, if /z/ then the preceding consonants is voiced e.g.

baths [ba:θs] pence [pɛns] false [fɔ:ls]

stoves [stəʊvz] pens [pɛnz]

Similarly if the last consonant of a consonant cluster is /t/, the preceding consonant is either voiceless or /m/ /n/ or /l/, if /d/ then the preceding consonant is voiced e.g. /t/ dream [drɛmt] spelt [spɛlt] /d/ - stabbed [stæbd] beamed – [bi:md]. For examples of some of the consonants clusters that can occur see next section below.

iii Consonant Clusters

A consonant cluster is a sequence of consonants occurring at either the onset or close of a syllable. The English language permits a great deal of consonant clustering, however, not all the possible clusters permitted in the language are going to be shown in this section, only those which the writer feels are frequently used will be listed.

The following types of consonant clusters are permitted in English phonology:-

i) Initial - ccv
ii) Initial - cccv
iii) Final - vcc
iv) Final - vccc
v) Final - vcccc

i) CCV -	pl	-	play	[pleɪ]
	pr	-	pray	[preɪ]
	pj	-	pew	[pju:]
	bl	-	blow	[blaʊ]
	br	-	brown	[braʊn]
	bj	-	beauty	[bju:tɪ]
	tr	-	truck	[trʌk]
	tj	-	tune	[tju:n]
	tw	-	twit	[twɪt]
	dr	-	driver	[draɪvə]
	dj	-	dune	[dju:n]
	dw	-	dwarf	[dwɔ:f]
	kl	-	cloud	[klaʊd]
	kr	-	cream	[kri:m]
	kj	-	cure	[kjʊə]
	kw	-	quick	[kwɪk]
	gl	-	glue	[glu:]
	gr	-	great	[greɪt]
	mj	-	mews	[mju:z]
	nj	-	neutral	[nju:trl]

fl	-	fly	[flaɪ]
fr	-	fruit	[fruːt]
fj	-	future	[fjuːtʃə]
vj	-	view	[vjuː]
θr	-	through	[θruː]
θw	-	thwart	[θwɔːt]
sp	-	spoon	[spuːn]
st	-	stick	[stɪk]
sk	-	sky	[skaɪ]
sm	-	smoke	[smɔʊk]
sn	-	snore	[snɔː]
sl	-	slate	[sleɪt]
sj	-	pseudo	[sjuːdɔʊ]
sw	-	swim	[swɪm]
ʃr	-	shrank	[ʃræŋk]

ii) CCCV

spl	-	spleen	[splɪːn]
spr	-	spring	[sprɪŋ]
spj	-	sputum	[spjuːtəm]
str	-	straight	[streɪt]
stj	-	stew	[stjuː]
skr	-	scramble	[skræmbl]
skw	-	squatter	[skwɒtə]

iii Final - VCC

pt	-	stopped	[stɒpt]
pθ	-	depth	[dɛpθ]
ps	-	taps	[tæps]
bd	-	sobbed	[sɒbd]
bz	-	tabs	[tæbz]
tθ	-	eighth	[eɪtθ]
ts	-	shouts	[ʃaʊts]
dz	-	buds	[bʌdz]
kt	-	packed	[pækt]
ks	-	ticks	[tɪks]
gd	-	begged	[bɛgd]
gz	-	rags	[rægz]
tʃt	-	searched	[sɜ:tʃt]
dʒd	-	lodged	[lɒdʒd]
mp	-	stamp	[stæmp]
md	-	blamed	[bleɪmd]
mf	-	triumph	[traɪʌmf]
mθ	-	warmth	[wɔ:mθ]
mz	-	farms	[fa:mz]
nt	-	scent	[sɛnt]
nd	-	sand	[sænd]
ntʃ	-	inch	[ɪntʃ]

nθ	-	anthem	[ænθəm]
ns	-	answer	[ænsə]
nz	-	beans	[biːnz]
ŋd	-	longed	[lɒŋd]
ŋk	-	sink	[sɪŋk]
lp	-	pulp	[pʌlp]
lb	-	bulb	[bʌlb]
lt	-	shelter	[ʃɛltə]
ld	-	sold	[səʊld]
lk	-	milk	[mɪlk]
ltʃ	-	mulch	[mʌltʃ]
ldʒ	-	bulge	[bʌldʒ]
lm	-	elm	[ɛlm]
ln	-	kiln	[kɪln]
lf	-	gulf	[gʌlf]
lv	-	solve	[səʊlv]
lθ	-	wealth	[wɛlθ]
ls	-	false	[fɔːls]
lz	-	souls	[səʊlz]
lʃ	-	welsh	[wɛlʃ]
ft	-	soft	[sɒft]
fθ	-	twelfth	[twɛlfθ]
fs	-	coughs	[kɒfs]
vd	-	starved	[staːvd]

vz	-	stoves	[stəʊvz]
θt	-	toothed	[tuːθt]
θs	-	[myths]	[miːθs]
ðd	-	clothed	[kləʊðd]
ðz	-	clothes	[kləʊðz]
sp	-	wasp	[wɒsp]
st	-	passed	[pɑːst]
sk	-	ask	[ɑːsk]
zd	-	seized	[siːzd]
ʃt	-	slashed	[slæʃt]

iv VCCC

pts	-	erupts	[ɪrʌpts]
pst	-	elapsed	[ɪlæpst]
pθs	-	depths	[dɛpθs]
dst	-	midst	[mɪdst]
kts	-	acts	[ækts]
kst	-	axed	[ækst]
ksθ	-	sixth	[sɪksθ]
mpt	-	prompt	[prɒmpt]
mps	-	mumps	[mʌmps]
mfs	-	nymphs	[nɪmfs]
nts	-	pants	[pænts]
ndz	-	mounds	[maʊndz]
ntʃt	-	lunched	[lʌntʃt]

ŋdʒd	-	lunged	[lʌŋdʒd]
nθs	-	months	[mʌnθs]
nst	-	paunced	[pɑ:nst]
nz d	-	—	—
ŋkt	-	thanked	[θæŋkt]
ŋks	-	zincs	[zɪŋks]
lpt	-	helped	[hɛlpt]
lps	-	gulps	[gʌlps]
lts	-	belts	[bɛlts]
lkt	-	milked	[mɪlkt]
lks	-	silks	[sɪlks]
lbz	-	bulbs	[bʌlbz]
ldz	-	moulds	[məʊldz]
ltʃt	-	belched	[bɛltʃt]
ldʒd	-	buldged	[bʌldʒd]
lmd	-	filmed	[fɪlmd]
lmz	-	overwhelms	[əʊvəwɛlmz]
lnz	-	kilns	[kɪlnz]
lfs	-	shelfs	[ʃɛlfs]
lfθ	-	twelfth	[twɛlfθ]
lvd	-	dissolved	[dɪzɒlvd]
lvz	-	resolves	[rɪzɒlvz]
fts	-	lofts	[lɒfts]
spt	-	grasped	[grɑ:spt]

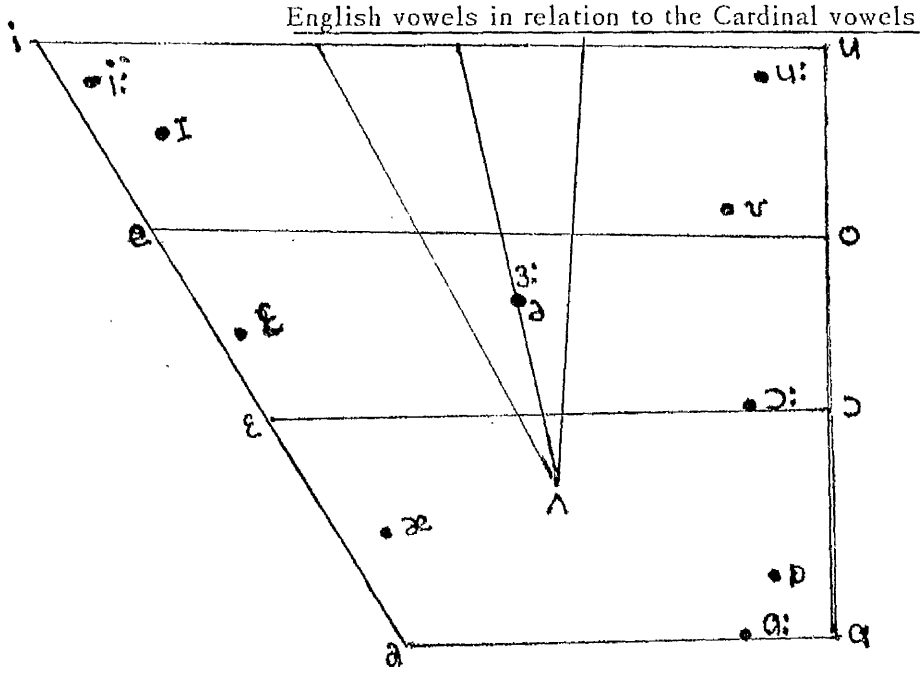
sps	-	gasps	[gɑ:sps]
sts	-	posts	[pəʊsts]
skt	-	basked	[bɑ:skt]
sks	-	tusks	[tʌsks]

v) - VCCCC

mpts	-	tempts	[tɛmpts]
mpst	-	glimpsed	[glɪmpst]
lpts	-	sculpts	[skʌlpts]
ksts	-	texts	[tɛksts]

iV. VOWELS.

English vowels in relation to the Cardinal vowels



English has 12 relatively pure vowels which can be grouped into seven short ones: /ɪ/, /ɛ/, /æ/, /ɒ/, /ʊ/, /ə/, and /ʌ/, and five long ones: /i:/, /ɑ:/, /ɔ:/, /ɜ:/ and /u:/. It is generally agreed that the English vowels are different from each other not only in terms of length but in quality as well. Authorities on English phonetics tend to differ in their emphasis on the question of length and quality. Thus those who want to show the close relationship which exists between the long and short vowels tend to lay emphasis on the distinctive importance of length, while those who want to demonstrate the difference between the vowels, emphasize their quality. Among the champions of quality there are some who contend that the quality of vowels can be determined according to whether there is muscular tension of the tongue during their production. Those vowels, which require considerable muscular tension on

the part of the tongue, are characterized as 'tense vowels' and those during the production of which the tongue is held loosely are classified as 'lax vowels', on the same lines as the English consonants from the obstruent group have been divided into the 'fortis' and 'lenis' series. For the purposes of this work however, both the quantity and quality of the vowels will be regarded as of equal consequence and such terms as tense and lax will be employed to mean as above whenever it is felt the use of such a term will help to clarify a point.

English long front vowel /i:/ This is made with the front of the tongue raised to nearly close front position, with lips spread. The muscles of the tongue are tense while its sides make a firm contact with the upper molars. This English vowel is near to cardinal vowel [i]. /i:/ does not normally occur in syllables closed by /ŋ/.

Examples

need	[ni:d]
piece	[pi:s]
seige	[si:dʒ]
bead	[bi:d]
police	[pəli:s]

The length of the vowel /i:/ varies according to its position in a syllable, and as to whether the vowel appears in a syllable closed by a fortis or lenis consonant. Thus, the vowel is longest when it appears final or in a syllable closed by a lenis consonant. The following are examples of this:

see	[si:]
seed	[si:d]

wee [wi:]

weed [wi:d]

Its length is considerably reduced when it appears in a syllable closed by a fortis consonant.

see [si:]

Contrast:- seat [sit]

weed [wi:d]

weep [wip]

This is the pattern with all the so called long vowels in English.

English short front vowel /I/: This is pronounced with part of the tongue more to the centre than to the front in a half close position; the lips are spread loosely while the tongue muscles are in a more relaxed condition as compared to the tension of the long vowel /i:/. The sides of the tongue make a light contact with the upper molars. The quality of this vowel is near to that of a centralized cardinal vowel [e] ie [ë]. E.g:-

pity [pɪtɪ]

business [bɪznɪs]

pennies [pɛnɪz]

percentage [pəsɛntɪdʒ]

The degree of closeness and centralization of this vowel varies according to the accentual force following up on the vowel. Gimson cites the word 'visibility' [vɪzɪ'bɪlɪtɪ] as having a vowel more like the one described above in the first and third syllables, and a somewhat more centralized /I/ on the second and fourth

syllable. In unaccented syllables of certain words there is free variation R.P. between /I/ and /ə/. In fact the word 'visibility' quoted above is transcribed by the Oxford Advanced Learners Dictionary of Current English as [vɪzəbɪlətɪ]. Such words as problem, possible, interesting are quoted by Gimson as having [ɪ] and [ə] appearing in free variation:

[prɒblɪm] - [prɒbləm], [pɒsɪbl] - [pɒsəbl]

[ɪntrəstɪŋ] - [ɪntrɪstɪŋ].

English short front vowel /ɛ/: The front part of the tongue is raised to a position between half close and half open, the lips being loosely spread and slightly wider apart than for /I/. The sides of the tongue make light contact with the upper molars. The quality is in between that of cardinal vowel [e] and cardinal vowel [ɛ] either a more open quality of cardinal [e] namely [e̞] or closer quality of cardinal [ɛ] namely [ɛ̝].

examples:-

set	[sɛt]
head	[hɛd]
many	[mɛnɪ]

English short front vowel /æ/: The front part of the tongue is raised to a position between half open and open. The mouth is slightly more open than for /ɛ/. The sides of the tongue make slight contact with the back molars. The lips are naturally open. The quality is near to that of a more open cardinal vowel /ɛ/ = [ɛ̞]. /æ/ does not occur in final, open syllables.

Examples: sat [sæt]
pack [pæk]
lad [læd]

Although this vowel is traditionally short there is a lengthening process going on in R.P., especially in syllables closed by lenis consonants. Even though this is a general characteristic among all vowels, according to Gimson a lengthened /æ/ is equivalent in quantity to the longest varieties of the five traditionally long vowels, and he suggests that this may be due to the increasing proximity in R.P. of /ɛ/ and /æ/ in quality and that the extra length serves as an additional disnctive feature.

Contrast: sat [sæt]
sad [sæ:d]
cap [kæp]
cab [kæ:b]

English Short Central Vowel /ʌ/: The centre of the tongue is raised to the height just above the fully open position with considerable opening of the jaws, lips are normally open, and there is no contact between the tongue and the upper molars. The quality is that of a centralized slightly raised cardinal vowel [ɑ] = [ɑ̈]. /ʌ/ does not occur in final, open syllables.

examples: but [bʌt]
money [mʌnɪ]
colour [kʌlə]
flood [flʌd]
[flʌd]

English long back vowel /ɑ:/: Part of the tongue, between the centre and back is raised to open position, with considerable opening of the jaws and the lips being neutrally open. There is no contact between sides of the tongue and the upper molars. The quality is that of a slightly more forward cardinal vowel [ɑ]. /ɑ:/ does not normally occur before /ŋ/.

Examples

path [pɑ:θ]

cart [kɑ:t]

heart [hɑ:t]

psalm [sɑ:m]

laugh [lɑ:f]

Long /ɑ:/ examples:

car [kɑ:]

card [kɑ:d]

tar [tɑ:]

tardy [tɑ:dɪ].

Reduced: examples:

cart [kɑt]

tart [tɑt]

English back vowel /ɒ/: The back of the tongue is raised to open position, the jaws being open with slight open lip-rounding. There is no contact between the tongue and the upper molars. The quality is that of open lip-rounded cardinal

vowel [ɑ] ie secondary cardinal vowel [ɒ]. /ɒ/ does not occur in a final open syllable. Examples follow:

cot	[kɒt]
wand	[wɒnd]
cough	[kɒf]
because	[bɪkɒz]

English long back vowel /ɔ:/: The back of the tongue is raised between the half open and half close positions, with medium lip rounding. No contact is made between the tongue and upper molars. The quality lies between cardinal vowel [ɔ] and [o] ie a closer type of cardinal vowel [ɔ̝] = [ɔ̞] or a more open quality of cardinal vowel [o] = [o̞]. /ɔ:/ does not occur before /ŋ/. Examples follow:

force	[fɔ:s]
door	[dɔ:]
cause	[kɔ:z]
salt	[sɔ:lt]

Long /ɔ:/ examples:

more	[mɔ:]
cord	[kɔ:d]
dwarves	[dwɔ:vz]
fall	[fɔ:l]

Reduced length: examples:

port	[pɔt]
court	[kɔt]
dwarf	[dwɔf]

English short almost central vowel: /ʊ/ Part of the tongue, between the back and the centre, is raised to a position just above half close, no contact being made between the tongue and the upper molars. The tongue muscles are loosely held and the lips are closely but loosely rounded. The quality is that of a centralized cardinal vowel [o] = [ɵ]. /ʊ/ occurs in both accented and unaccented syllables but it does not occur in word initial positions nor in syllables closed by /ŋ/. It occurs finally only in unaccented syllables e.g. the weak forms of 'to', 'do', and 'who' are sometimes realized as [tʊ], [dʊ], [hʊ]. Examples follow:

pull	[pʊl]
wolf	[wʊlf]
bull	[bʊl]
good	[gʊd]
could	[kʊd]

According to Gimson this vowel sometimes appears in free variation with the long back vowel /u:/ in some words in the speech of some people. The words given as examples are:

room	[ru:m] [rʊm]
groom	[gru:m] [grʊm]
broom	[bru:m] [brʊm]

English back vowel /u:/ Part of the tongue slightly more forward of the back, is raised to a position somewhat less close than cardinal vowel [u] with minimal contact between the tongue and upper molars. The muscles of the tongue are tense as compared to the lax state in the production of /ʊ/, while the lips are closely rounded. The quality is that of a slightly lowered and centralized

cardinal vowel [u]. /u:/ does not occur before /ŋ/. Examples:-

route	[ruːt]
jubilee	[dʒuːbɪlɪ]
glue	[gluː]
food	[fuːd]

Long and reduced form:

shoe	[ʃuː]	shoot	[ʃut]
hooves	[huːvz]	hoof	[huf]
lose	[luːz]	loose	[lus]

English Central Vowel /ɜ:/ The centre of the tongue is raised to a position between half-close and half-open, no contact being made between tongue and upper molars. The lips are neutrally open. Since this is a central vowel, it cannot be related to any of the cardinal vowels which have either front or back quality. /ɜ:/ does not normally occur before /ŋ/. Examples follow:

worth	[wɜːθ]
bird	[bɜːd]
turn	[tɜːn]
perch	[pɜːtʃ]
search	[sɜːtʃ]
journey	[dʒɜːnɪ]

Long and reduced forms:

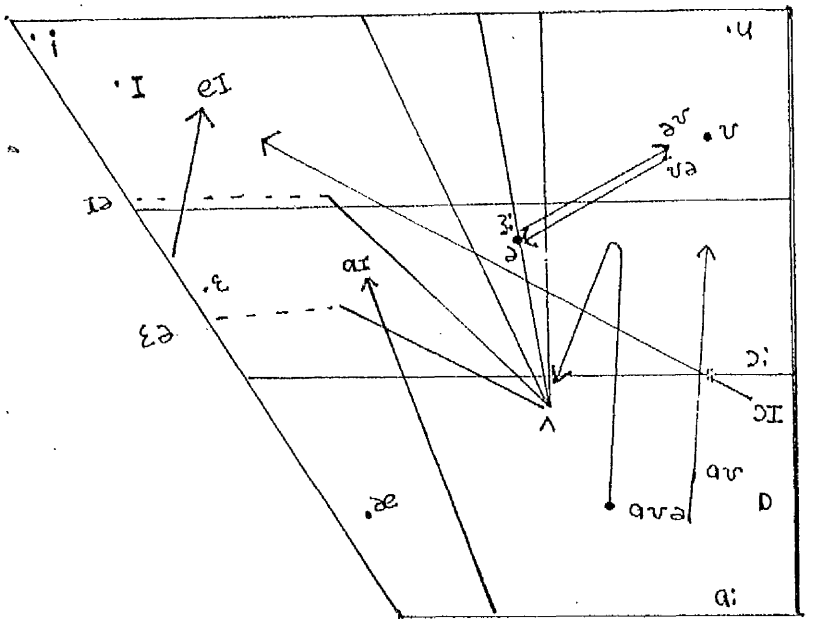
curd	[kɜːd]	curt	[kɜt]
heard	[hɜːd]	hurt	[hɜt]
err	[ɜː]	earth	[ɜθ]

English Short Central Vowel /ə/: This vowel is related in quality to the above described long central vowel /ɜ:/, their mode of production being somewhat the same. The difference between the two vowels being that the short vowel /ə/ occurs mainly in unaccented syllables, it is also the vowel commonly used in weak forms of such words as 'a', 'an', 'the' and 'for' - /ə/, /ən/ /ðə/ /fə/ etc.

e.g

suitable	[suːtəbl]
again	[əgɛn]
sister	[sɪstə]
woman	[wʊmən]
buttered	[bʌtəd]

ENGLISH DIPHTHONGS



Gimson defines a diphthong as a sequence of vocalic elements which form a glide within one syllable. It may be seen to consist of two elements in its formation. Gimson describes the first element as the starting point and the second element as the point in the direction of which the glide is made. The first part is usually more prominent in the sense that most of the length and stress associated with a diphthong is concentrated on this part. According to Ladefoged,[8] the second part is so brief and transitory, that it is difficult to determine its exact quality. Diphthongs are equivalent in length to the long vowels. Their length is similarly affected according to whether they appear in open syllables or, if closed, whether it is by a fortis or lenis consonant. Thus, the first element is long in an open syllable and before a lenis consonant and considerably shortened before a fortis. /eI/: This diphthong has its starting point slightly below the cardinal vowel [e] ie [e̞] and moves towards the English short vowel /I/.

Examples follow:

weight	[weɪt]
break	[breɪk]
say	[seɪ]
pain	[peɪn]
fame	[feɪm]

Long and reduced forms:-

phase	[feːɪz]	face	[feɪs]
pays	[peːɪz]	pace	[peɪs]
may	[meːɪ]	make	[meɪk]

/aɪ/: This diphthong starts from a point slightly behind the cardinal front vowel [a] and moves in the direction of the English short vowel /I/. Examples:

time	[taɪm]
high	[haɪ]
jibe	[dʒaɪb]
eye	[aɪ]
either	[aɪðə]

Long and reduced forms:-

hide	[haːɪd]	height	[haɪt]
five	[faːɪv]	fife	[faɪf]

/ɔɪ/: This starts from a point a little below the cardinal back vowel [ɔ] and moves toward the direction of the English short vowel /I/.

Examples:-

boy	[bɔɪ]
noise	[nɔɪz]
voice	[vɔɪs]
toy	[tɔɪ]

Long and reduced forms:-

void	[vɔːɪd]	quoit	[kɔɪt]
joys	[dʒɔːɪz]	Joyce	[dʒɔɪs]

/əʊ/: This diphthong begins at a central position about the same area as the two English central vowels /ɜː/ and /ə/ and moves towards the English short vowel /ʊ/. Examples follow:

goat	[gəʊt]
know	[nəʊ]
sew	[səʊ]
home	[həʊm]
shoulder	[ʃəʊldə]

Long and reduced form:

goad	[gəːʊd]	goat	[gəʊt]
robe	[rəːʊb]	rope	[rəʊp]

/ɑʊ/: Begins at a position a little to the front of English long vowel /ɑː/ going towards the direction of English short vowel /ʊ/. However for many speakers the first element of /aɪ/ and /ɑʊ/ may be identical.

Examples follow:

house	[haʊs]
pound	[paʊnd]
bow	[baʊ]
cow	[kaʊ]

Long and reduced forms:-

loud	[laːʊd]	lout	[laʊt]
gouge	[gaːʊdʒ]	grouch	[graʊtʃ]

v. SUPRASEGMENTAL FEATURES OF ENGLISH

Suprasegmental features are those aspects of speech which may extend beyond the limits of a segmental phoneme and may embrace much higher units of an utterance. The main suprasegmental features of English are stress, length and pitch variations.

STRESS: Although it is generally agreed that one of the basic phonological categories available to English speakers is the feature of stress, not everyone is agreed on how it is to be defined. Most linguists however agree that stress is speaker oriented i.e. it is something which the speaker does, but how it is signalled to the listener is another matter. Gimson defines stress in terms of a 'mental pulse or beat'[9] taking place in the nervous activity of the brain. This 'mental pulse or beat' may be the basis for rhythmic grouping of utterances in English speech which enables a native speaker to tap out the beats of sentence even when it is not completed. The 'beat' is manifested in terms of extra articulatory effort or greater loudness both of which, according to Gimson, have no linguistic significance without the complex help of pitch, quantity and quality variations of which more will be said later.

Daniel Jones defines stress as the degree of force with which a sound or syllable is uttered. It involves a strong 'push'[10] from the chest wall and consequently a strong force of exhalation which gives the objective impression of loudness. It sometimes happens that a strong stress falls on a sound incapable of receiving any noticeable increase of loudness, when this happens a foreign

learner of the language may not detect the presence of a stress, but a native speaker of the language would, subjectively from his own knowledge of the language and how he would produce the same utterance in similar circumstances.

Ladefoged defines stress simply as something the speaker does,[11] but he gives hints on how to detect a stressed syllable. According to him a stressed syllable is often but not always louder than an unstressed one, and it is usually on a higher pitch, although this may not always be the case. He says the most efficient way of detecting a stressed syllable in English is to note the length of the vowel, a stressed syllable frequently has a longer vowel.

All these definitions illustrate that stress in English is by no means an easy concept and that as Gimson noted, it is only achieved through a complex combination of several phonological processes in English which we shall see later.

Stress has several functions in English, for instance, there are some words whose grammatical function can only be determined by whether the stress falls on the first or second syllable i.e. certain nouns are distinguished in this way from verbs, and certain compound nouns from combinations of adjective plus noun.

Examples:-

NOUN	VERB
ˈinsult	inˈsult
ˈimport	imˈport
ˈincrease	inˈcrease

ˈrebel	reˈbel
ˈexport	exˈport
ˈrefund	reˈfund
ˈconvict	coˈnvict

COMPOUND NOUNS	ADJECTIVE NOUN
ˈnightdress	ˈnight ˈdress
ˈsweetmeat	ˈsweet ˈmeat
ˈgreenland	ˈgreen ˈland

Stress in English is also used to give special emphasis to a word or to contrast one word with another in a sentence. This is called sentence stress as compared to the above which is word stress. In English each word has what is known as a citation form i.e. the form in which it is pronounced when it is considered in isolation. At least one syllable is fully stressed in this form, but in conventional speech words rarely maintain their citation form. The stresses which occur on them when treated individually, sometimes become modified when the words are part of a sentence. The modification takes the form of dropping some of the stresses on syllables which would otherwise have been stressed so as to avoid having too many stresses coming too close to each other. E.g. Here is a list of words with their individual stresses: ˈMwamba, ˈold, ˈfriend, ˈwanted, ˈfive, ˈnew, ˈnets. If we string these words into a sentence some of the stresses on some words will disappear:

ˈMwamba's old ˈfriend wanted ˈfive new ˈnets.

In this sentence we have only four stressed syllables falling on ˈMwamba, ˈfriend, ˈfive and ˈnets, the syllables on the other words have lost theirs. This is by no means

the only acceptable way of saying this sentence, the stress can be shifted to any word we want to place our emphasis on. For instance we can shift the stress from 'friend to 'old if we want to contrast Mwamba's old friend with his new friend. We can also shift it to wanted or now if we want to imply a contrast with something else.

In spite of these shifts in stress patterns, the stressed syllables tend to occur at regular intervals giving prominence to those parts of the speech to which the speaker wishes to attach particular importance, the syllables in between the stressed ones being weakly and rapidly articulated. This gives the speech a certain kind of rhythm the maintenance of which involves the following phonological processes:-

a) strong and weak forms

b) variable stressing

c) vowel quality and quantity/quality of consonants

Strong and Weak Forms: There are many common English words which can have two or more forms of pronunciation, a strong form and one or more weak ones. Strong forms occur mainly in stressed positions although they may occur in unstressed ones too. Weak forms occur only in unstressed positions. Weak forms are produced by changing the vowel sound or by eliding a sound (vowel or consonant). When the forms differ in vowel quality it is generally the central vowel /ə/ which is found in the weak form when the strong form has some other vowel. The following is a list of strong and weak forms in English as given by Daniel Jones [12]:-

WORD	STRONG FORM	WEAK FORM
a	/eɪ/	/ə/
am	/æm/	/əm/ /m/
an	/æn/	/ən/ /n/
and	/ænd/	/ənd/ /ən/ /n/
are	/ɑ:/	/ə/
	/ɑ:r/ before vowels	/ər/ before vowels
as	/æz/	/əz/
at	/æt/	/ət/
be	/bi:/	/bɪ/
been	/bi:n/	/bɪn/
but	/bʌt/	/bət/
by	/baɪ/	/bə/ /bɪ/
can	/kæn/	/kən/
could	/kʊd/	/kəd/
do	/du:/	/dʊ/ /də/ /d/
does	/dʌz/	/dəz/
for	/fɔ:/	/fə/
	/fɔ:r/ before vowels	/fər/ before vowels
from	/frɒm/	/frəm/ /frm/
had	/hæd/	/həd/ /əd/ /d/
has	/hæz/	/həz/ /əz/ /z/ /s/
have	/hæv/	/həv/ /əv/ /v/
he	/hi:/	/i:/ /hɪ/ /ɪ/
her	/hɜ:/	/hər/ /ə:/ /ə/
	/hɜ:r/	/hər/ /ə:r/ /ər/

WORD	STRONG FORM		WEAK FORM	
him	/hɪm/		/ɪm/	
his	/hɪz/		/ɪz/	
is	/ɪz/		/z/ /s/	
ma'am	/mæm/		/məm/	
many	/mɛnɪ/		/mənɪ/	/mnɪ/
me	/mi:/		/mɪ/	
must	/mʌst/		/məst/	/məs/
my	/maɪ/		/mdɪ/	/mɪ/
nor	/nɔ:/		/nə/	
	/nɔ:r/	before vowels	/nər/	before vowels
not	/nɒt/		/nt/	/n/
of	/ɒv/		/əv/	/v/
or	/ɔ:/		/ə/	
	/ɔ:r/	before vowels	/ər/	before vowels
per	/pə:/		/pə/	
saint	/seɪnt/		/snt/	/sənt/ /sn/ /sɪnt/
shall	/ʃæl/		/ʃəl/	/ʃl/ /ʃ/
she	/ʃi:/		/ʃɪ/	
should	/ʃʊd/		/ʃəd/	/ʃd/
sir	/sə:/		/sə/	
	/səːr/	before vowels	/sər/	before vowels
so	/səʊ/		/sə/	
some	/sʌm/		/səm/	/sm/
such	/sʌtʃ/		/sətʃ/	
than	/ðæn/		/ðən/	/ðn/

WORD	STRONG FORM		WEAK FORM	
that	/ðæt/		/ðət/	
the	/ði:/		/ðɪ/ /ðə/ /ð/	
them	/ðɛm/		/ðəm/ /əm/	
there	/ðɛə/		/ðə/	
	/ðɛər/	before vowels	/ðər/	before vowels
till	/tɪl/		/tɪl/	
to	/tu:/		/tʊ/ /tə/	
upon	/ə'pɒn/		/əpən/	
us	/ʌs/		/əs/ /s/	
was	/wɒz/		/wəz/	
we	/wi:/		/wɪ/	
were	/wə:/		/wə/	
	/wə:r/	before vowels	/wər/	before vowels
who	/hu:/		/u:/ /hʊ/ /ʊ/	
will	/wɪl/		/l/ /əl/	
would	/wʊd/		/wəd/ /əd/ /d/	
you	/ju:/		/jʊ/	
your	/jɔ:/		/jə/	

The above listed words are spoken fast in between stressed syllables when they appear in the weak form.

Variable Stressing: The tendency to avoid stressed syllables coming close to each other may cause the stress on a poly-syllabic word to be on one syllable in one

sentence, and on another in another sentence:-

1) Its a ˈpsychological ˈstudy

2) but - Its ˈgood psychological ˈpractice

3) He is ˈtemperaˌmental

but

4) He is ˈquite temperaˌmental

Vowel Tenseness and Quantity: We have already seen that the vowels of English can be classified in terms of tenseness (tense or lax) and quantity (short, long), and that there is a correlation between tenseness and length. Thus the following English vowels and diphthongs have been classified as tense and long:

/i:/, /ɑ:/, /ɔ:/, /u:/, /eɪ/, /əʊ/, /ɑɪ/, /ɑʊ/, /ɔɪ/, /ɪə/, /ɛə/,

and the following as lax and fairly short:

/ɪ/, /ɛ/, /æ/, /ʊ/, /ʌ/.

We have also seen that the so called long vowels have their length reduced when they appear in a syllable closed by a voiceless consonant i.e. bead /bi:d/ constrasted with beat /bi:t/ and the short vowels become even shorter in the same circumstances e.g. bid-[bɪd], bit-[bɪ̆t] . In addition to this process vowel length is also affected by the rhythm of a sentence in connected speech. The tendency to have stressed syllables come after regular intervals reduces the length of some vowels which are otherwise considered long when they are treated as individual phonemes. For instance long vowels and diphthongs in stressed syllables are shorter when an unstressed syllable immediately follows in the same word, moreover the greater

the number of following unstressed syllables the shorter becomes the stressed vowel:

'greedy /'gri:dɪ/

'greedily /'gri:dɪlɪ/

Long vowels also become shorter when they appear in unstressed syllables e.g. cartoon /kɑ:'tu:n/. All these factors which we have just discussed act together to maintain regular rhythm in English speech.

Intonation: Intimately bound up with stress and all the other features just discussed above is intonation. Intonation is the linguistic use of pitch variations which occur in English speech. Throughout every syllable in a normal conversational utterance the pitch is going up and down. Intonation is closely connected with stress and the other features which contribute to the rhythm of the language, in that the information an utterance conveys to a listener derives not only from its changing sound patterns and the constrastive stress already referred to above but also from associated variations of pitch ie intonation patterns. Indeed, so close is this connection, that future use of the term 'intonation' in this study is to be taken as including the associated stress system.

Intonation has several roles in English. The most obvious role is its syntactic function. By means of pitch variations, it is possible to divide long utterances into coherent syntactic structures or word groups.

1) The old man driving the car /is a prison guard.//
2) Even if he reads the chapter twice/he will not be able to understand it.//

The syntactic division between the two clauses in each of the above sentences will be marked by intonation in speech. The pattern of pitch which accompanies the first clause in each sentence will be recognized as a separate unit from the following clause by means of intonation. Sometimes the meaning of the whole sentence is determined by where we decide to put the division of a word group, for instance in the following sentence:

She washed and took the boy for a walk.

As one word group, this sentence would mean "She washed the boy and then took him for a walk", but as two word groups:

She washed, and took the boy for a walk.

It would mean she had a wash and then took the boy for a walk. In writing the division is marked by punctuation but in speech it is marked by using different pitch patterns for each word group.

Intonation is also used for grammatical purposes, in the following sentence:

Tea or coffee?

If said with a rise in pitch on Tea and a fall on coffee, it means that only tea and coffee are available, but with a rise in pitch on both Tea and coffee, it means that other beverages are available, tea and coffee being only examples.

Intonation also functions to mark the focus of information in a word group. The words in a word group do not necessarily all contribute an equal amount of information to the listener, some are more crucial to the meaning than others, but this depends largely on the context or circumstances in which the word group is

said. By means of pitch variations, those parts of an utterance on which the speaker wishes to concentrate attention stand out clearly so that the listener is left in no doubt. For instance in the following sentence':

'It was very useful information.'

The last three words would be important if the listener was hearing this sentence for the first time, but if he already knew something about the 'information' and perhaps he only wanted to find out what sort of information the speaker had got then the word 'useful' would be important, but 'information' would lose its importance because it is already common knowledge between them. Similarly if the listener knew that the 'information was useful', but he just wanted to find out to what degree the information was useful then the word 'very' would be important etc. The word or words in a word group which are the focus of information are said to be accented.

Another very important use of intonation in English but which is not so obvious to a foreign learner of the language, is its function as one of the indicators of the speakers' attitude at the moment of speaking to the situation in which he is placed. Most linguists who have done some work on English intonation are generally in agreement as to the importance of intonation as an indicator of the speaker's attitude. It is also generally agreed that intonation by itself cannot adequately express the speaker's attitude without the help of other variables. Whatever difference of opinion there may be in this respect among linguists is one of emphasis as to which variable carries most weight as an indicator of the speaker's

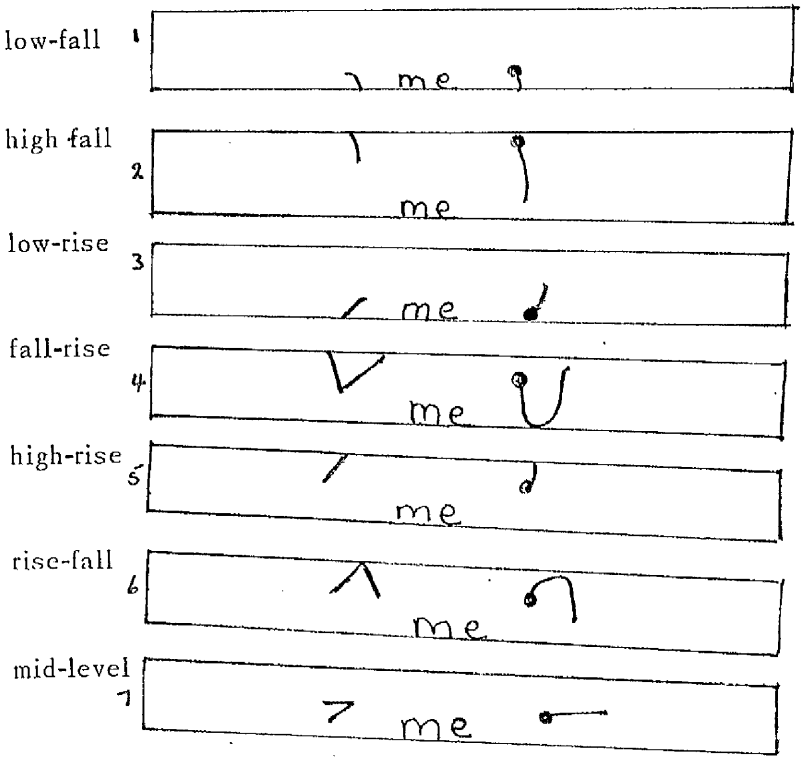
attitude. O'Connor and Arnold[13] tend to think that both the intonation and the verbal structure of an utterance are important aspects in expressing the speaker's attitude, and that intonation alone without the verbal content would only give a vague impression of the total meaning. Similarly the verbal structure alone without the intonation would lack some additional information which intonation alone can provide, without which there would be more imprecisions and ambiguities in the language than there already are.' Gimson on the other hand thinks that "attitudinal meaning of an utterance must always be interpreted within the context, both of the situation and also of the speaker's personality."[14] While Allen and Corder say "intonation by itself does not mean anything in particular, it does not denote any particular attitude." But accompanied with other variables such as speed and loudness harsh or breathy voice, a smile, or pursed lips it does denote attitude.[15]

Dr. Hazel Carter, on the other hand, suggests that the intonation pattern one chooses to use is so inextricably bound up with attitude in the mind of a native speaker of English that the influence of the semantic content of an utterance is sometimes minimal. On this point she states "An intonation signal saying in effect 'I dislike and despise you' will override whatever the speaker may be saying in terms of semantic content."[16] (Some intonation tunes in English carry very offensive connotations.)[17] This means that no matter how friendly the semantic content of an utterance might be and no matter what additional paralinguistic features such as smile or a laugh might accompany it, if the speaker chose an offensive tune, then the tune alone is enough to make an English man angry, and he might even respond with physical violence. I, for one would tend to agree with

Gimson, I feel that the relationship which exists between the speaker and the listener at the time of the utterance and the context of utterance itself must have some bearing on the interpretation of the speaker's attitude.

The analysis of British English intonation patterns which follows will be based on O'Connor and Arnold 'Intonation of Colloquial English.'

O'Connor and Arnold distinguish ten basic tone groups in their unemphatic and emphatic forms and their attitudinal connotations in British English. A tone group is composed of tunes which share one or more pitch features, and whose attitudinal meaning is more or less the same on the part of the speaker. A tune is defined by O'Connor and Arnold as a complete pitch treatment of a word group. On the whole, seven tunes have been distinguished in British English by O'Connor and Arnold.



Each word group no matter how long or short it may be must have one of these seven tunes. The structure of the intonation group is as follows:

+/ prehead +/ head + /nucleus + /tail

The nucleus is an obligatory feature of the group, the other features may or may not be present. The nucleus is the stressed syllable of the last accented word in a word group, and it is on this syllable that the whole tune centres . The seven rising, falling or level tunes which take place on the nucleus or start from it are known as nucleur tones. There are seven of these tones corresponding to the seven tunes. The head starts from the first stressed syllable to the nucleus,, the prehead consists of all unstressed syllables before the head. The syllables which come after the nucleus are called the tail.

Examples':

ˈJOAN
↑
NUCLEUS

Tom and ˈJoan are here
↑ Head ↑ Nucleus ↑ Tail

I think that Tom and ˈJoan are here.
↑ Prehead ↑ Head ↑ Nucleus ↑ Tail

There are four types of head ; low, high, falling and rising head and two types of prehead; low and high. The last three types of head can be found in both unemphatic and emphatic forms.

The following tables are taken from Dr. Carter's summary of O'Connor and Arnold.

TYPES OF NUCLEUS (TAIL)

TABLE I

LOW FALL	↘	"No," she replied.	— . . .
HIGH FALL	↘	Surely it's not!	— . . .
LOW RISE	↗	What did you say?	— . . .
HIGH RISE	↗	Definitely?	— . . .
FALL-RISE	∨	Come along, slowcoach!	— . . .
RISE-FALL	∧	Do it yourself, then!	— . . .
MID-LEVEL	—	Finally...(er)	— . . .

TYPES OF HEAD

TABLE II

LOW — . . . . . Surely you can tell the difference?

HIGH — . . . . . Why does he have to come now?

EMPHATIC — . . — . . . . Why did you tell me you couldn't see anything?

Stepping

FALLING — . . . . . No one is going to pick you up again.

EMPHATIC SLIDING — . — . — , Not unless I'm there he won't.

RISING — . . . Absolutely right!

EMPHATIC CLIMBING — . . — . . . I have told you and told you and told you again.

TYPES OF PREHEAD

TABLE III

LOW . . . But if I catch you again

HIGH . . . But you were perfectly entitled to

The ten tone groups referred to on page 88 are composed of a combination of the various parts of a nuclear tone as set out on the above tables, with every other part. Those tones which share common features in terms of meaning and pitch patterns have been grouped together to form a tone group. The following table is Dr. Carter's summary of the ten tone groups from O'Connor and Arnold.

OUTLINE OF THE TEN TONE GROUPS

TABLE 4

U = Unemphatic E = Emphatic

Group name		Pre-head	Head	Nucleus
1)				
Low-drop:	U	low	(high)	low-fall
	E	high	(high)	low-fall
2)				
High-drop:	U	(Low)	(high)	high-fall
	E	high	(high)	high-fall
		either	stepping	high-fall
		either		high-fall (s) high-fall
3)				
Take-off:	U	(low)	(low)	low-rise
	E	high	low	low-rise
4)				
Low Bounce:	U	(low)	high	low-rise
		high		low-rise
	E	high	high	low-rise
		either	stepping	low-rise
5)				
Switchback:	U	(low)	(falling)	fall-rise
	E	high	(falling)	fall-rise
		(either)	sliding	fall-rise
		(either)		high fall (s) fall-rise

6)				
Long Jump':	U	(low)	rising	high-fall
	E	high	rising	high-fall
		(Either)	climbing	high-fall
7)				
High bounce:	U	(low)	(high)	high-rise
	E	high	(high)	high-rise
		Either	stepping	high-rise
8)				
Jack-knife:	U	low	(high)	rise-fall
	E	high	(high)	rise-fall
		Either	stepping	rise fall
9)				
High dive':	U	(low)	(high)	high Fall (Low accents) L. rise
	E	(high)	(high)	highfall (Low accents) Low rise
		Either	Stepping	highfall (low accents) low rise
10)				
Terrace:	U	Low	(high)	mid level
	E	high	(high)	Mid-level
		(Either)	stepping	Mid level

SECTION 2. CHAPTER 4.

II. PRONUNCIATION PERFORMANCE IN ENGLISH CONSONANTS

With the foregoing description of the Tonga and English sound systems in mind, two exercises were given to two groups of Zambian school children. The first group consisted of children from grade 5, the second from Form 3 all speaking Tonga as their first language. The informants were chosen as follows:-

Grade 5 - 10 girls
10 boys.

Form 3 - 10 girls
- 10 boys.

The socio-economic background of the subjects was not explored.

The first exercise consisted of two passages, The First Farmers and The Three Fishermen, chosen from two grade 5 New Zambia Primary Course English Readers, which the informants were asked to read. The second exercise consisted of a series of pictures which the informants were asked to name while I tape-recorded their responses.

The aim of these exercises was to determine the nature of the English sounds the informants have so far learnt, how far these diverged from standard English sounds, and whether these divergences can be explained in any way. The exercises also tried to assess whether there are any significant differences between the two groups.

The writer recognizes the limitations of using a reading exercise as a basis for determining learned sounds since reading involves recognition of the written

symbol, associating it with a particular sound, and finally the actual physical production of the sound on the part of the child. The writer would have preferred to use spontaneous speech as a basis, but as has been pointed out already in this work, the emphasis in the teaching of the English language in Zambian schools is more on the written than the spoken form of the language. Responses to questions tend to be limited to one word per question, only the few bold ones can produce a few sentences spontaneously at grade 5 level. This necessitated the use of the one method through which sufficient data could be obtained and that was by making the informants read.

The following is a single consonant chart for both English and Tonga to which reference will be made in the course of the analysis of the informants' pronunciation performance.

ENGLISH AND TONGA SINGLE CONSONANT PHONES

	Bilabial	Labio-dental	Dental	Alveolar	Post Alveolar	Retroflex	Palato-Alveolar	Palatal	velar	Labio-Velar	Glottal
Plosive											
English	p b			t d					k g		
Tonga	p b			t d				t	k g		
Affricate											
English							tʃ	dʒ			
Tonga								tʃ dʒ			
Nasal											
English	m			n					ŋ		
Tonga	m			n				ɲ	ŋ		
Roll											
English											
Tonga											
Flap											
English											
Tonga				ɾ							
Lateral											
English				l							
Tonga				l							
Fricative											
English		f v	θ ð	s z			ʃ	ʒ			h
Tonga	ɸ β			s z			ʃ	ʒ hj ɦj	ɣ	ɦʷ fʷ	
Continuants or Semi-vowels											
English	w										
Tonga	w							j ɻ			

PERFORMANCE IN ENGLISH PLOSIVES GROUP 1

English Phoneme	Words	Informants: - 1	2	3	4
/p/	people	[pipo]	[pipo]	[pipo]	[pipo]
	perhaps	[pəhæeps]	[pəhaps]	[pəhaps]	[pəhaf
	pulled	[pu:d]	[pu:d]	[pu:d]	[pu:d
/b/	because	[bikos]	[bikos]	[bikos]	[biko
	bare	[bɛə]	[b̤ɛə]	[b̤ɛə]	[b̤ɛə
	boat	[bo:t]	[b̤o:t]	[b̤o:t]	[b̤o:t
/t/	time	[taɪm]	[taɪm]	[taɪm]	[taɪm
	hot	[hot]	[hot]	[hot]	[hot]
	water	[wotə]	[wotə]	[wotə]	[wotə
/d/	do	[d̤u]	[d̤u]	[du]	[d̤u]
	hard	[had̤]	[had̤i]	[had]	[had̤i
	sadly	[sadəli]	[sadəli]	[sadəli]	[sad
/k/	catch	[katʃ]	[katʃ]	[kotʃ]	[kotʃ]
	rock	[rok]	[rok]	[ʃok]	[ʃoki
	because	[bikos]	[bikos]	[bikos]	[bikos
/g/	get	[get]	[g̤et]	[g̤et]	[g̤et]
	big	[big]	[big]	[b̤ig]	[big]
	ago	[ago]	[ago]	[ago]	[ago]

ENGLISH PLOSIVES GROUP 1

English Phoneme	Words	Informants: - 1	2	3	4
/p/	people	[pi:pl]	[pi:po]	[pipl]	[pi:po]
	perhaps	[pəhæps]	[pəhæps]	[pəhæps]	[pəhæ
	pulled	[puld]	[pulə]	[puld]	[pud]
/b/	because	[bikoz]	[bikos]	[bikos]	[biɣos]
	bare	[bɛə]	[b̤ɛə]	[b̤ɛə]	[bɛə]
	boat	[b̤ot]	[b̤o:t]	[b̤o:t]	[b̤o:t]
/t/	time	[tarm]	[tarm]	[taɪm]	[taɪm]
	hot	[hot]	[ɦot]	[ɦot]	[hot]
	water	[wotə]	[wotə]	[wotə]	[wotə]
/d/	do	[du]	[du]	[du]	[du]
	hard	[had]	[ɦad]	[ɦad]	[ɦad]
	sadly	[sədəli]	[sədəli]	[sədəli]	[sədəri]
/k/	catch	[kətʃ]	[katʃ]	[katʃ]	[katʃ]
	rock	[rok]	[rok]	[rok]	[rok]
	because	[bikoz]	[bikos]	[bikos]	[biɣos]
/g/	get	[gɛt]	[gɛt]	[get]	[gɛt]
	big	[big]	[big]	[big]	[b̤ig]
	ago	[əgo]	[əgo]	[əgo]	[əgo]

Plosives

On the whole, the informants had no trouble in using a different phoneme in this group of sounds when it was required, but allophonic details were wrong. For instance, it was noted that not only did all the informants voice the plosives in all positions, but some of them also tended to pronounce them with more articulatory energy than was required for the English variety in some items. Examples follow :

big	[b̤ig]
bottom	[b̤otom]
bare	[b̤ɛə]
boat	[b̤oːt]

On the other hand this force or energy does not seem so obvious on some items starting with the same sound even though the sound is fully voiced in all cases. For instance the voiced plosive sound/b/ in the following items does not seem to be as energetically articulated as in the above items:

because	[bikɔs]
became	[bikɛm]
buy	[baɪ]
but	[bʌt]

Similarly in the case of the velar voiced plosive /g/ the sound seemed to be stronger in some items and softer in others. e.g.:

get	[g̤ɛt]
big	[b̤ig̤]
go	[g̤o]
ago	[ago]
again	[agɛn]

One explanation which can be advanced for this, but which does not seem to explain everything, is perhaps the stress pattern of some of the words. For instance the stress on both be ˈcause and beˈcame falls on the second syllable whereas for the monosyllabic items:- big, boat and bare the stress is on the one syllable, and for ˈbottom it is on the first syllable. Since the stressed syllable in English normally receives extra articulatory energy as compared to the unstressed syllable which is weakly articulated this might explain why the plosive sound /b/ in beˈcause and beˈcame is not as forcefully articulated as that in big, boat, bare, bottom - and similarly in get, go. However, this does not explain why the plosive sounds /b/,/g/ , in words ˈbuy, but, ˈago and aˈgain do not show the same articulatory force as the others since the stress pattern is the same at least for buy and but for aˈgo and aˈgain the stress falls on the second syllable, so working on the same analogy as the last group of words, the two plosive sounds /b/ and /g/ should receive the same force of articulation. Perhaps in the case of buy and but the explanation might lie in the nature of the vowel which follows the plosive i.e. whether it is a back or front vowel. In the case of ago and again, the position the plosive occupies in the word might be a contributing factor.

The plosive /d/ seemed to have been articulated equally forcefully in the following words:

didn't [dɪdɪnt]

do [dʊ]

Another factor which might be explored as a possible explanation for both the voicing of above mentioned plosive sounds in all positions, and the extra articulatory effort

put into their production in some words, might be some influence from the Tonga plosive sounds working in conjunction with the other factors already discussed. In the discussion of the Tonga voiced plosives we found that they have four distinctive features. Firstly, that the closure for Tonga voiced plosives lasts for a longer time than in their English counterparts and consequently these Tonga plosives are classified as 'geminate consonants'. Secondly the effort put into producing these sounds is much greater than the English plosives, therefore these consonants are also called 'reinforced.' Thirdly, the release of these plosives seems to be accompanied with additional breath or murmur which feature has an effect upon the pitch of the previous syllable. These plosives are therefore known as depressors. Fourthly the Tonga voiced plosives seem to be voiced in all positions, this voicing being the main distinctive feature between them and their voiceless counterparts. It is also worth mentioning that the Tonga voiced plosives, like all other Tonga consonants, do not come finally in a word since the phonology of the language allows only open syllables and never closed ones.

It is just possible that the informants, sensing the extra articulatory energy expended on the English stressed syllables in the words already discussed, substituted for the English plosive sounds, the Tonga 'geminate and reinforced' ones which proved a little too strong for the English ones. It is also possible that the plosive sounds in the unstressed syllables may have been heard as lighter than those in the stressed syllables, and therefore even though they were fully voiced in a position where English voiced plosives would normally the partially voiced, they were not

accompanied with the same force in their production as the group referred to above. The phenomenon of voicing the plosives in initial and final positions could also probably be traced to the Tonga system. In Tonga, voicing is the main distinguishing feature between the voiced and the voiceless plosives, while in English it is not. Neither group of informants would be aware of any such requirements on the part of the English language, infact, I would go as far as to say that even the most sophisticated speakers of English whose first language is Tonga would not be aware of it, unless they had done some English phonetics. As far as I know, they would be quite contented with voicing, what would be in English the lenis plosives, in all positions in their English speech, without realizing that they are breaking a basic English phonological rule.

Where the plosive sound comes at the end of a word I could not always be certain, whether the articulatory force was concentrated on the plosive sound alone, or whether infact, an epenthetic vowel followed the plosive sound. Examples follows:

learned	[lɛnədi]	[lɛnəd̤]
wanted	[wɑntədi]	[wɑntəd̤]
pointed	[pointədi]	[pointəd̤]
laughed	[lɑfudi]	[lɑfud̤]
waited	[weitədi]	[weitəd̤]
looked	[lukədi]	[lukəd̤]
big	[b̤igi]	[b̤ig̤]

This same feature seems to occur with some consonant clusters as will be seen later.

As far as the English fortis plosives are concerned, the main area of difference between them and similar sounds produced by the informants seems to lie in the release stage. It has been stated that English fortis plosives may only be weakly aspirated in an unstressed syllable and in final positions. In the informants' pronunciation however, the plosives have been released in all positions and furthermore the aspiration in this position tends to be rather strong, producing what appears to be an epenthetic vowel in final position in some informants' speech. Examples follows:-

people	[pʰipʰo]
per·haps	[pʰəhaps]
hot	[hotʰi]
waited	[weitʰəd]
market	[maketʰi]

One explanation for this might be found in the phonology of the informants' first language. In Tonga the voiceless plosives /p/ and /t/ are not only fully released in the two positions in which they occur but they are also aspirated in these positions. This is almost the opposite of what happens in English, and someone unacquainted with the rules of English phonology is bound to confuse matters.

The case of the English velar fortis plosive /k/ calls for separate treatment. In this particular exercise it had been found that this sound is aspirated at the beginning of the word, but not in the middle or finally. Furthermore it has been noted that some of the informants used a sound nearer to the velar fricative /ɣ/ in some instances than to the velar plosive /k/. Again I feel the explanation for this might be found by looking at the Tonga sounds. Tonga has three velar sounds, the

plosive pair and one voiced fricative. The conditions which govern the use of the voiceless plosive and not the fricative have not yet been established. It looks as if both sounds can appear initially as well medially. For examples see p. 14 . The plosive pair is both 'reinforced' and the voiceless of the pair is also accompanied by aspiration. Therefore the two features the latter shares with the English fortis /k/ and the variety the informants used in word initial medially and finally. The aspiration is absent as has been pointed out above.

The two informants quoted in this chapter as using the velar fricative [ɣ] are both from Group 2. In both instances the velar fricative has been detected in the word <u>because</u> [bɪˈɣɔz]. It is not clear whether there is a connection between this sound and the unaspirated velar plosive sound which most of the informants tended to use medially in the English examples.

English Affricates

Group 1

Phoneme	Word	Informants: - 1	2	3	4
/tʃ/	catch	[kaʧ]	[kaʧ]	[kaʧ]	[kaʧ]
	much	[mʌʧ]	[mʌʧ]	[mʌʧ]	[mʌʧ]
/dʒ/	page	[peʤ]	[peʤ]	[peʤ]	[peʤ]

Group 2

	Word	Informants:- 1	2	3	4
/tʃ/	catch	[kaʧ]	[kaʧ]	[kaʧ]	[kaʧ]
	much	[mʌʧ]	[mʌʧ]	[mʌʧ]	[mʌʧ]
/dʒ/	page	[peʤ]	[peʤ]	[peʤ]	[peʤ]

English Nasals

Group 1

Phoneme	Word	Informants: - 1	2	3	4
/m/	money	[mən]	[mʌn]	[mʌn]	[mʌn]
	farmers	[fɑməz]	[fɑməz]	[fɑməz]	[fɑməz]
	same	[sem]	[sem]	[sem]	[sem]

Group 2

	Informants: - 1	2	3	4
money	[mʌn]	[mʌn]	[mʌn]	[mʌn]
farmers	[fɑməz]	[fɑməz]	[fɑməz]	[fɑməz]
same	[sem]	[sem]	[sem]	[sem]

English Nasals (cont'd.)

Group 1

	Informants:- 1	2	3	4
name	[nɛm]	[nɛm]	[nɛm]	[nɛm]
morning	[moniŋ]	[moniŋ]	[moniŋ]	[moniŋ]
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]

Group 2

	Informants:- 1	2	3	4
name	[nɛm]	[nɛm]	[nɛm]	[mɛn]
morning	[mɔ:niŋ]	[moniŋ]	[moniŋ]	[moniŋ]
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]

English Alveolar Lateral

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/l/	Lakes	[leiks]	[lɛks]	[rwɛks]	[rwɛks]
	cold	[ko:d]	[ko:d]	[ko:d]	[ko:d]
	full	[fu:]	[fut]	[fu:]	[fut]
	only	[onli]	[onəli]	[onəli]	[onəli]

Group 2

	Informants:- 1	2	3	4
lakes	[lɛks]	[rwɛks]	[lɛks]	[leiks]
cold	[ko:d]	[ko:d]	[ko:d]	[ko:d]
full	[fut]	[fut]	[fut]	[fut]
only	[onəli]	[onəli]	[onəli]	[onəli]

The informants' pronunciation performance in English africates and nasals did not seem to raise any significant points.

Perhaps the two consonants which tended to give the informants more difficulty than the others, are the English alveolar lateral /l/ and its allophones and the post-alveolar frictionless continuant /r/ . Since the two have often been confused with each other in the informants' speech, they will be dealt with together here. In the informants' attempts to pronounce the two above mentioned English consonants in the following words; rock, right, lakes, and full - the following sounds were produced:

rock	[rok] [lok] [ɹok]
right	[rait] [ɹait]
lakes	[leks] [lweks] [ɹeks] [rweks]
full	[fu] [fut]

With the first group of informants no clear pattern seems to emerge, that is, there is no indication as to which gets confused with what. They do not seem to be able to make a distinction between the two sounds therefore, /r/ is sometimes realized as [r], [l] or [ɹ] and similarly with /l/ . The English dark [ɫ] , an allophone of the alveolar lateral /l/ has turned out to be quite difficult not only for the informants in Group 1 but also a large number from Group 2. Most of the informants who were unable to produce this sound seemed to have arrived at a compromise by leaving out completely the dark [ɫ] sound and lengthening the preceding vowel so that the words quoted above are realized as:

pull	[pu:]
full	[fu:]

cold [kɔ:d]

sold [sɔ:d]

To some extend this practice is not unlike that of some British English speakers. Gimson, in his discussion of variants of British English /l/ and [ɫ], says this of the usage of [ɫ] by some speakers; "In some speech, notably that of Cockney, the tongue tip contact for [ɫ] is omitted, this allophone of /l/ being realized as a vowel (vocoid) in the region of [ö] with weak lip rounding or as [ɤ] with neutral or weakly spread lips, thus sell [seö] or [seɤ], fall [fɔö] or [fɔɤ] table [teɪbö], [teɪbɤ]."[18] He goes on to say that this tendency is by no means confined to Cockney, but that many R.P. speakers will use [ö] for [ɫ] in words such as 'beautiful, careful, people, table. Perhaps the difference between Gimson's observation and the Tonga informants' performance is that, the Tonga informants tended to carry this practice even when dark [ɫ] comes after vowel before consonant as in the words cold and sold shown above.

As far as the second group of informants are concerned the majority of them seem to have reached a stage where they can make a semantic distinction between the alveolar lateral /l/ and the frictionless continuant /r/. Consequently most informants in this group pronounced rock, and right, as [rok] and [rait] respectively, and lakes as [leks]. However even in this group, some informants still had problems with /l/ and /r/. It was noted that of those who still experienced difficulty with these two consonants most of them tended to find the frictionless continuant /r/ more difficult than the lateral /l/ in its clear form. More than half of this group tended to

pronounce rock, as [lok] or [rok] and lake, as [lek]. Only a fraction of them pronounced lakes as [reks] or [rweks] .

The difficulty the informants experienced in producing these two English consonants may be explained by another look at the Tonga sounds. Tonga has one voiced alveolar lateral sound [l] which occurs in free variation with the flapped variety [ɾ]. The post alveolar frictionless continuant /r/ as found in English and the sounds related to it are absent from Tonga. The fact that the [r] sound is absent from Tonga phonology does not in itself explain the difficulty; as we shall see later in this chapter, there are a number of sounds in English, which are absent from Tonga, but which, even the youngest informants have been able to master faster than the above sounds. The problem as we have observed, particulary with the first group of informants, is that of complete failure to distinguish which of the two sounds is required for which word. A look at the two English sounds in question, shows that they in fact sharea number of phonetic features. Firstly they are both formed around the alveolar region, one being alveolar and the other post-alveolar. They are both frictionless continuants and therefore have vowel like features. They are both voiced. We have already noted Gimson's observation that some R.P. speakers replace the frictionless continuant [r] with the alveolar flap or tap, [ɾ] on page in intervocalic positions. To the Tonga informants therefore, the three [r] [l] and [ɾ] would be auditorily similar, and working on the same analogy as with the Tonga /l/ and, /ɾ/ the English /r/ sound could be mistaken for yet another allophone of /l/ to be used in free variation with [l] and [ɾ] . This is where the problem lies, in that English makes a semantic distinction between words with the /r/ sound and those

with /l/, where as Tonga as pointed out before does not make any between [l] and [r]. If /r/, is taken as a free variant of the latter, then it would not matter which of the three, one happened to use, they would all serve the same purpose, and this seems to be the process going on with the informants.

We have mentioned that the informants in Group 2 showed some awareness that /r/ and /l/ are two different phonemes and not merely allophones of the same phoneme to be used indiscriminately. We have also pointed out that quite a number in this group too still have problems with the sounds. We found that of those who still have problems with these two sounds, half of them tended to pronounce the /r/ sound as an [l] or [ɹ]. It would seem that the same process, as we have just described for Group 1 is continuing even at this stage. The fact that the same informant, who pronounces rock, as [lok,] or [rok] would pronounce right, as [rait,] rules out the likelihood that, he is unable to make the /r/ sound, and is simply substituting his Tonga /l/ for the sound which he cannot make. On the other hand it might be sheer hyper correction. Perhaps these informants felt that if they used the sound [l] more they were bound to be correct.

One other feature, which has been noted in the informants' pronunciation of the above two sounds, is a tendency to labialize both sounds. This tendency is however, also noted among some R.P. speakers of English, in respect of /r/. It is possible that since /r/ and /l/ are confused with each other in the informants' speech the features of the two sounds may equally be confused.

English Fricatives

Group 1

Phoneme	Word	Informants: - 1	2	3	4
/f/	food	[fud]	[fud]	[fud]	[fud]
	laughed	[lafd]	[lafudi]	[lafd]	[lafd]
	knife	[naif]	[naif]	[naif]	[naif]

Group 2

		Informants:- 1	2	3	4
	food	[fud]	[fud]	[fud]	[fv:d]
	laughed	[la:ft]	[laft]	[laft]	[laft]
	knife	[naif]	[naif]	[naif]	[naif]

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/v/	very	[vɛr]	[vɛr]	[vɛr]	[vɛr]
	covered	[kavad]	[kavad]	[kʌvəd]	[kʌvəd
	heavy	[hɛv]	[hɛv]	[hɛv]	[hɛv]

Group 2

		Informants:- 1	2	3	4
	very	[vɛr]	[vɛr]	[vɛr]	[vɛr]
	covered	[kʌvəd]	[kʌvəd]	[kavədi]	[kʌvəd
	heavy	[hɛv]	[hɛv]	[hɛv]	[hɛv]

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/θ/	think	[θiŋk]	[θiŋk]	[θiŋk]	[θiŋk]
	something	[samθiŋ]	[samθiŋ]	[sʌmθiŋ]	[samθiŋ]
	earth	[ɛ:θ]	[ɛθ]	[ɛθ]	[ɛθ]

English Fricatives (cont'd.)

Group 2

	Informants: 1	2	3	4
think	[θiŋk]	[θiŋk]	[θiŋk]	[θiŋk]
something	[sʌmθiŋ]	[sʌmθiŋ]	[sʌmθiŋ]	[sʌmθ
earth	[ɛθ]	[ɛθ]	[ɛθ]	[ɛθ]

Group 1

Phoneme	Word	Informants: 1	2	3	4
/ð/	them	[ðɛm]	[ðɛm]	[ðɛm]	[ðɛm]
	that	[ðat]	[ðat]	[ðat]	[ðat]

Group 2

	Informants: 1	2	3	4
them	[ðɛm]	[ðɛm]	[ðɛm]	[ðɛm]
that	[ðat]	[ðat]	[ðat]	[ðat]

Group 1

	Informants:- 1	2	3	4
/s/ soon	[sun]	[sun]	[sun]	[sun]
must	[mʌst]	[mʌst]	[mʌst]	[mʌst]
yes	[jes]	[jɛs]	[jɛs]	[jɛs]

Group 2

	Informants: - 1	2	3	4
soon	[sun]	[sun]	[sun]	[sun]
must	[mʌst]	[mʌst]	[mʌst]	[mʌst]
yes	[jɛs]	[jɛs]	[jɛs]	[jes]

English Fricatives (cont'd.)

Group 1

Phoneme	Word	Informants: 1	2	3	4
/z/	was	[waz]	[waz]	[waz]	[waz]
	these	[ðiz]	[ðiz]	[ðiz]	[ðiz]
	whose	[huz]	[huz]	[huz]	[huz]

Group 2

	Informants: 1	2	3	4
was	[waz]	[waz]	[waz]	[waz]
these	[ðiz]	[ðiz]	[ðiz]	[ðiz]
whose	[huz]	[huz]	[huz]	[huz]

Group 1

Phoneme	Word	Informants: 1	2	3	4
/ʃ/	sheep	[ʃip]	[ʃip]	[ʃip]	[ʃip]
	fishermen	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]	[fiʃəm
	fish	[fiʃ]	[fiʃ]	[fiʃ]	[fiʃ]

Group 2

	Informants: 1	2	3	4
sheep	[ʃip]	[ʃip]	[ʃip]	[ʃip]
fishermen	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]	[fiʃə
fish	[fiʃ]	[fiʃ]	[fiʃ]	[fiʃ]

/ʒ/ — — — —

English Fricatives (cont'd.)

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/h/	hot	[hot]	[hot]	[hot]	[hot]
	whose	[huz]	[huz]	[huz]	[huz]
	perhaps	[pəhaps]	[pəhaps]	[pəhaps]	[pəhaps]

Group 2

	Informants :- 1	2	3	4
hot	[hot]	[hot]	[hot]	[hot]
whose	[huz]	[huz]	[huz]	[huz]
perhaps	[pəhaps]	[pəhaps]	[pəhaps]	[pəhaps]

FRICATIVES: The informants' performance in English fricatives was generally satisfactory, with no appreciable difference in features, between the informants', and those features normally associated with English fricatives, except the glottal fricative /h/. It is perhaps worth noting before discussing the glottal fricative, that English has about four fricative sounds of which there is no equivalent in Tonga. There are the labio-dental pair /f/ and /v/ and the dental pair /θ/ and /ð/. These are sounds with which one would expect the informants to find difficulty, since they are missing in their own language. But contrary to expectations both groups of informants produced them easily.

On the question of the R.P. glottal fricative /h/, some informants in both groups tended to produce the voiced variety rather than the voiceless one in such words as :

hot [hot]
hard [had]
heavy [hɛv]

English Semi-vowels

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/w/	went	[went]	[went]	[went]	[went]
	while	[wait]	[wait]	[wait]	[wait]
	always	[ɔ͡lwez]	[ɔ͡lwez]	[ɔ͡lwez]	[olwez]

Group 2

	Informants:- 1	2	3	4
went	[went]	[went]	[went]	[went]
while	[wait]	[wait]	[wait]	[wait]
always	[olwez]	[olwez]	[olwez]	[olwez]

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/j/	Years	[jɛəz]	[jɛz]	[jɛ:z]	[jɛz]
	you	[ju]	[ju]	[ju]	[ju]
	use	[juz]	[juz]	[juz]	[juz]

Group 2

	Informsnts:- 1	2	3	4
years	[jɛz]	[jɛ:z]	[jɛz]	[jɛ:z]
you	[ju]	[ju]	[ju]	[ju]
use	[juz]	[juz]	[juz]	[juz]

Frictionless Continuant

Group 1

Phoneme	Word	Informants:- 1	2	3	4
/r/	rock	[rɔk]	[rɔk]	[ɾɔk]	[ɾɔkɪ]
	right	[rait]	[rait]	[ɾait]	[ɾait]
	very	[vɛr]	[vɛr]	[vɛr]	[vɛr]

Group 2

	Informants:- 1	2	3	4
rock	[rɔk]	[rɔk]	[rɔk]	[rɔk]
right	[rait]	[rait]	[rait]	[rait]
very	[vɛr]	[vɛr]	[vɛr]	[vɛr]

SEMIVOWELS: The informants' performance in English semivowels /j/ and /w/ was very satisfactory, no difference being found between the sounds produced by the informants and the R.P. semivowels.

Generally speaking therefore, the informants' pronunciation performance in English consonants, was quite satisfactory, even though there were some minor differences here and there which showed that English was not their first language. There is no question of their being misunderstood on the basis of their pronunciation of English consonants except in the case of the alveolar lateral /l/, and the post alveolar frictionless continuant /r/, both of which we have already discussed at length. It has also been noted that, the difficulties the informants have, in distinguishing /l/ and /r/ as separate phonemes at Grade 5 level, are almost overcome by the time they reach Form 3 level.

ii. PERFORMANCE IN ENGLISH CONSONANT CLUSTERS

Not all possible English consonant clusters were tested. Only those which appear in the Grade 5 Word List Book, and the two reading passages from The First Farmers, and The Three Fishermen were selected. The Grade 5 Word List Book contains a list of lexical items which the Grade 5 pupils are supposed to have mastered. The lexical items are grouped according to the terms when they are supposed to have been learnt, so that it is easy to select vocabulary which has been covered in each term. The words containing the clusters from the word list book were presented to the informants in picture form, the informants were then asked to name each picture and tape-recorded. Sometimes the picture elicited a different word from the one hoped for, as in the case of the picture of a drinking glass, most informants preferred to call it a tumbler. At others the picture did not convey a meaning for which the informants could easily supply a word. This applied especially to verbs as in the case of the word splash. Most informants from Group 1 said they did not know what the picture represented. The interviewer offered to explain a little some of the pictures which caused difficulty, and in some cases visual aids were used.[19]

With the second group however, there did not seem to be any problems in naming the pictures, but as with Group 1, the picture with the drinking glass was sometimes interpreted as tumbler.

The interviewer made no attempt to correct when the informant interpreted the picture as representing something other than the meaning of the expected word. The following are the words which tended to be interpreted differently from what the

interviewer had hoped for:

priest	preacher
glass	tumbler
smoke	fire
square	blackboard
fruit	food
taxi	car

Almost all the informants in Group 1 interpreted the picture of a drinking glass as representing the word tumbler. The majority of them in this group interpreted the picture of a square as representing the word blackboard. In Group 2 about half the informants said tumbler for glass, three interpreted smoke as fire and one fruit as food.

RESULTS OF PRONUNCIATION PERFORMANCE IN ENGLISH CLUSTERS:

There were some significant differences between the informants' pronunciation and that of received pronunciation of English consonant clusters.

PERFORMANCE IN CLUSTERS INVOLVING PLOSIVES AS FIRST ELEMENT

GROUP 1

	Word	Informants:- 1	2	3	4
pl	plough	[pʊlɑʊ]	[pʊlɑʊ]	[pʊlɑʊ]	[pʊlɑʊ]
	plant	[purants]	[purants]	[puranɛ]	[pulants]
pr	priest	[purist]	[pritʃə]	[purist]	[puritʃə]
bl	blanket	[bʊlaŋkɛt]	[blaŋkɛt]	[buraŋkɛt]	[bʊlaŋkɛt]
br	bread	[bʊlɛd]	[b rɛd]	[burɛd]	[burɛd]
	broken	[burokɛn]	[brokɛn]	[burokɛn]	[bʊrokɛn]
tr	train	[turɛn]	[t rɛn]	[turɛn]	[tʊrɛn]
dr	dress	[durɛs]	[durɛs]	[d'rɛs]	[durɛs]
kl	clock	[kilɔk]	[k'lɔk]	[kurɔk]	[kirɔk]
kr	cross	[kʊros]	[k'ros]	[k'ros]	[kiros]
gl	glass	[-]	[-]	[-]	[-]
gr	grass	[g'las]	[guras]	[guras]	[g'ras]

GROUP 2

	Word	Informants: - 1	2	3	4
pl	plough	[pʊlɑʊ]	[pʊrɑʊ]	[pʊlɑʊ]	[pʊlɑʊ]
	plant	[pulants]	[purants]	[pʊrants]	[prants]
pr	priest	[puritʃə]	[p'rist]	[p'rist]	[p'rist]
bl	blanket	[bulaŋkɛt]	[burakɛt]	[bʊlaŋkɛt]	[bulaŋkɛt]
br	bread	[burɛd]	[burɛd]	[bʊrɛd]	[burɑid]
tr	train	[turɛn]	[t'rɛn]	[tʊrɛn]	[t'rɛn]

GROUP 2 (Continued)

	Word	Informants':- 1	2	3	4
dr	dress	[dᵘrɛs]	[durɛs]	[durɛs]	[dᵘrɛs]
kl	clock	[kiloK]	[kiloK]	[kᵘroK]	[kᵘroK]
kr	cross	[kuros]	[kᵘros]	[kᵘros]	[kᵘros]
gl	glass	[g'las]	[gᵘras]	[g'las]	[-]
gr	grass	[g'ras]	[guras]	[guras]	[g'ras]

The informants' pronunciation performance in English consonant clusters involving plosives as first element displayed the same features as those found in the informants' pronunciation of English plosives as single consonants ie the plosives were fully released in all positions and in addition to this the lenis plosives were fully voiced in all positions as well as having a little of the extra articulatory force which we found in some of the informants' pronunciation of plosives as single consonants. It seems that a combination of these features in a plosive as initial element in a consonant cluster gives rise to what appears to be an epenthetic vowel. The nature of this vowel seems to vary in informants' pronunciation. In some cases one hears a plosive sound followed by a full vowel so that the cluster is broken up. Examples:

plants	[pᵘrants]
plough	[pulau]
blanket	[bᵘlajkɛt]
bread	[bᵘrɛd]
clock	[kiloK]
cross	[kᵘros]
glass	[gilas]

In other cases the break is not so definite, but one hears a plosive followed by a short sound with a front or back vowel resonance. Examples:

train [tuɾɛn]

drank [duɾaŋk]

cross [kuɾos]

grass [guɾas]

Front or Back Vowel Resonance: The quality of vowel resonance to be heard in the clusters with plosives as initial sounds seems to be determined in this particular sample by the quality of the plosive itself ie whether it is bilabial, alveolar or velar, and the consonant sound that follows immediately after the plosive. The vowel sound which follows the cluster so far does not seem to have any influence on the quality of vowel resonance.

Thus a bilabial/alveolar plosive + /liquid + front or back vowel tends to trigger a vowel sound with back vowel [u] resonance. A velar plosive + liquid + front/back vowel triggers a front vowel sound [i] before /l/ and a back vowel sound [u] before /r/.

There are also cases where one does not hear a break as such but there is successive articulation of the components as compared to the English 'overlapped' or dual articulation. Informant II in Group 1 displays more of this phenomenon than the others whose pronunciation is quoted in this chapter, but it has been found in others as well whose pronunciation performance can be found in the index: Examples from Informant I of Group 1 follow:

priest [p'ritʃa]

blanket [b'ʃaŋkɛt]

bread [b' rɛd]

train [t' rɛn]

So far we have attributed the phenomena of exploding both lenis and fortis plosives and voicing the lenis plosive in positions where they would normally be unexploded or partially voiced as well as the expenditure of more energy than is normally produced in the pronunciation of the lenis plosives as responsible for the presence of an epenthetic vowel in consonant clusters with plosives as initial sound. In the chapter on plosives as single consonants we associated the above named features with Tonga plosive sounds. Perhaps to get a clear picture of whether in fact these features alone are responsible for the presence of the epenthetic vowel, we should examine what kind of consonant clustering is permitted in Tonga phonology.

In the section on consonant clusters in Tonga we found that Tonga, unlike English, has very stringent restrictions as to what consonant clusters may occur in the language. There are three main types of consonant clustering in Tonga as shown on pages 27 - 32.

These restrictions to a homorganic nasal and a consonant, or a homorganic nasal plus consonant and semivowel mean that out of the whole range of English consonant clusters we have looked at in the previous section, the majority of them will not only sound strange but might prove very difficult to produce for a person who speaks Tonga as a first language. The natural tendency will be, as we have seen, to try to break the unusual sound into what would appear as a familiar sequence to a Tonga speaker.

PERFORMANCE IN CLUSTERS INVOLVING FRICATIVES AS FIRST ELEMENT

GROUP 1

	Word	Informants:- 1	2	3	4
fr	fruit		[fruɬ]		[fruɬ]
θr	three		[θri]		[θ'ri]
sp	spear		[spia]		[spia]
st	stool		[stu:]		[stu:]
sk	skirt		[skɛt]		[skɛt]
sl	sleeping		[slipiŋ]		[slipiŋ]
sm	smoke		[smouk]		[smok]
sn	snake		[snɛk]		[snɛk]
sw	sweet		[swit]		[swit]
spl	splash		[-]		[-]
spr	sprayer		[spuɾeiŋ]		[spuɾɛə]
str	stream		[sturim]		[sturini]
skr	screwdriver		[sk'rud'raivə]		[skurudraivə]
skw	square		[skwɛə]		[bakiboid]

GROUP 2

	Word	Informants:- 1	2	3	4
fr	fruit		[fruts]	[frut]	[fruts]
	three		[θiri]	[θ'ri]	[θ'ri]
sp	spear		[spia]	[spia]	[spia]
st	stool		[bentʃi]	[stu:]	[bentʃi]
sk	skirt		[skɛt]	[skɛt]	[skɛt]

GROUP 2 (Continued)

	Word	Informants: - 1	2	3	4
sl	sleeping		[sʃipiŋ]	[sripiŋ]	[sripiŋ]
sm	smoke		[smoK]	[smoK]	[smoK]
sn	snake		[snɛK]	[snɛK]	[snɛK]
sw	sweet		[swit]	[swit]	[swit]
spl	splash		[spʊlaʃiŋ]	[-]	[spʊlaʃiŋ]
spr	sprayer		[spʊrɛə]	[spʊrɛi]	[spʊrɛə]
str	stream		[strim]	[st'rim]	[strim]
skr	screwdriver		[skud'raivə]	[skʊrudʊraivə]	[skudraivə]
skw	square		[skwɛə]	[skwɛə]	[skwɛə]

The pronunciation performance on clusters with fricatives as first element gave a different picture from that with plosives as first element. In these clusters particularly those starting with alveolar fricative /s/ followed by /l/ it was difficult to detect the presence of an epenthetic vowel. In the labio dental and dental fricatives /f/ and /θ/ it was possible to detect the vowel in a few of the informants' pronunciation. Perhaps this could be explained by quoting what Daniel Jones says of English fricatives.

> "The positions of the tongue and lips during the articulation of /f/ approximate to those required for adjacent vowels. To this extent therefore it may be said that there exist subsidary members of the phoneme (considering the /f/ with neutral tongue-position to be the principal member). These differences of tongue and lip positions are, however, slight, and their effects on the acoustic quality of the sound are negligible for the ordinary linguist." [20]

Jones seems to imply that these features are not confined to /f/ alone but extend to all English fricatives. This, and the fact that fricatives can be held continuously without change in quality, raises the possibility that even if there were a short vowel sound of the same type as that detected in the clusters beginning with plosives, it would not be easy to detect its presence because, there would be no audible break between the fricative, and the following consonant sound. The fricative would, as it were, assimilate the features of whatever vowel is inserted, forming a sound, in which it would be difficult to detect a consonant-vowel demarcation.

Once in a while however, I heard pronunciations like [furut] for fruit, [θiri] for three and [θuro] for throw. These were not numerous and may perhaps be due to the nature of the [r] produced by the informants which tended to be a flap, or it might be explained by assuming a relapse on the part of the informants to the familiar way of treating a combination of such sounds in their own language. This might account for the inconsistencies in one individual's pronunciation. For instance it is possible to find clusters treated in the following ways by the same informant:

plough [p'lau]

plants [purants]

blanket [bᵘlaŋkɛt]

It is interesting to note that in the case of labio-dental and dental fricatives, that when an epenthetic vowel is detected, the quality of the vowel resonance tends to be determined by the quality of the vowel which follows the cluster, for instance back vowel [u] resonance for fruit and throw and front vowel [i] resonance for three

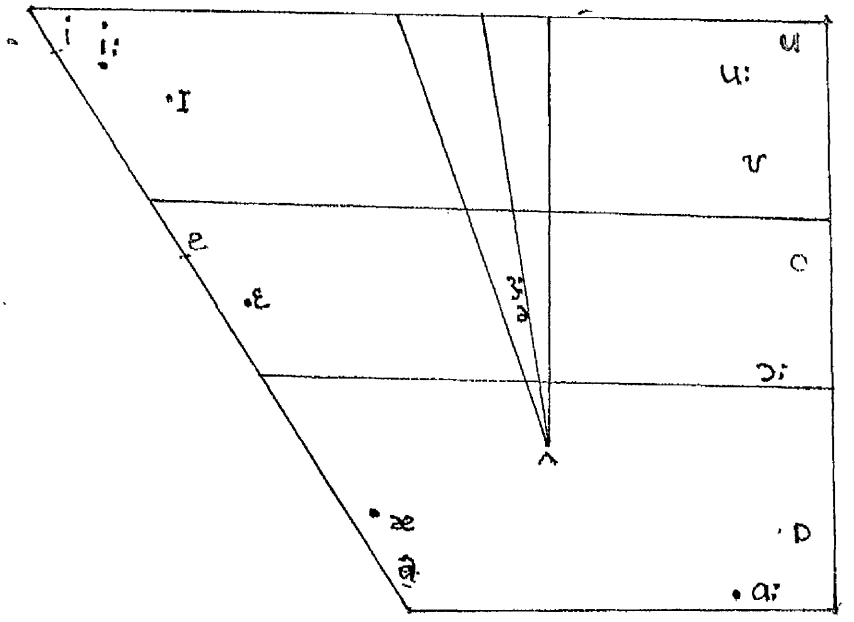
Clusters Involving Fricative + Plosive + Liquid

In these clusters, there is a combination of features associated with fricatives and plosives as first sounds in a cluster. The tendency is for the epenthetic vowel to be heard not between the fricative and plosive consonants but between the plosive and the lateral or frictionless continuant.

The same quality of vowel resonance as found in the plosives as first elements of a cluster seems to occur here ie back vowel [u] resonance after /p/ and /t/ and back vowel [u] resonance after /k/ followed by /r/.

In conclusion, it has been found that to pronounce two or three consonant sounds, each of which is produced in a different part of the mouth, in rapid succession, is not easy if one is used to a structure like that of Tonga which is mainly CVCV. It was also found that consonant clusters involving plosives either as first or second element of a cluster are more likely to have an epenthetic vowel between the plosive and the liquid sound, than clusters involving a fricative and a lateral or frictionless continuant. The epenthetic vowel varies in each individual's pronunciation, sometimes it is heard as a full vowel, at others as a brief vocoid with front or back vowel resonance or not detectable. The actual quality of the vowel resonance depends on the phonetic context as described above. Generally, no significant difference has been found between the pronunciation of the younger and older informants. The results seem to be significantly uniform, the inconsistencies in each individual informants' pronunciation are just as evident in Group 1 as they are in Group 2.

iii. PRONUNCIATION PERFORMANCE IN ENGLISH VOWELS - ENGLISH VOWELS IN RELATION TO TONGA VOWELS



The pronunciation performance in English vowels showed more significant differences between the informants' pronunciation and that of R.P. English than the pronunciation performance in English single consonants. Perhaps that is not surprising considering that most of the consonantal sounds found in English are also found in Tonga. Even though the consonants are not exactly identical, it can be argued that this at least gives the learner a starting point. The vowel chart above on the other hand shows that there is very little in common between the English and Tonga vowel systems. Tonga has only five pure vowels against the twelve of English. In addition to this, English has eight diphthongs and Tonga has none, so it can be assumed that the Tonga learner of English is likely to find the English vowel system more difficult to learn than the consonantal system. Yet on the other hand we have also noted that consonantal sounds which do not exist in Tonga have been learnt by both groups of informants without much difficulty. It anything, it

seems to be those English sounds which are auditorily similar to some Tonga sounds which seem to cause difficulties. From this point of view the opposite of what has been said before can be assumed, ie that since the English and Tonga vowel systems are so different it should therefore be easy for a Tonga learner of English to master the new sounds in the same way as the new English consonantal sounds were learnt. This however is not the case as the following analysis will show:

English Long Front Vowel /i:/

Group 1

Word	Informants:- 1	2	3	4
people	[pipo]	[pipo]	[pipo]	[pipo]
need	[nid]	[nid]	[nid]	[nid]
sheep	[ʃi:p]	[ʃip]	[ʃip]	[ʃip]
meal	[mit]	[mit]	[mit]	[mit]

Group 2

	Informants:- 1	2	3	4
people	[pipo]	[pipo]	[pipo]	[pipo]
need	[nid]	[nid]	[nid]	[nid]
sheep	[ʃip]	[ʃip]	[ʃip]	[ʃip]
meal	[mit]	[mit]	[mit]	[mit]

English Long Front Vowel /i: / The Tonga informants got the length of the English /i:/ wrong both phonetically and phonologically. The difference between the

English /i:/ and the variety of [i] which the majority of informants produced is not so much in quality as in quantity. The [i] the informant produced tended to be much shorter than the English /i:/, but the quality was about the same.

English Short Front Vowel /I/

Group 1

Word	Informants:- 1	2	3	4
fish	[fiʃ]	[fiʃ]	[fiʃ]	[fiʃ]
big	[big]	[big]	[big]	[big]
ship	[ʃɪp]	[ʃɪp]	[ʃip]	[ʃip]
mill	[miv]	[miv]	[miv]	[mit]

Group 2

	Informants:- 1	2	3	4
fish	[fiʃ]	[fiʃ]	[fiʃ]	[fiʃ]
big	[big]	[big]	[big]	[big]
ship	[ʃip]	[ʃip]	[ʃip]	[ʃip]
mill	[miv]	[mit]	[mit]	[winmil]

Two informants from Group 1 produced [I] for the word ship but produced [i] for the other words picked to illustrate this same vowel. The rest of the informants produced [i], the same vowel as they used for the English [i:]. From my experience the English /I/ sound is notoriously difficult for a Tonga speaker to produce, the main reason being that, while English has two distinctive sounds in the high front area [i:] and [I], Tonga has only one [i] therefore to a Tonga speaker all the sounds that are produced in this area are auditorily similar to the Tonga [i] and interpreted accordingly. It is therefore not surprising to find that

both English /i:/ and /I/ are interpreted as [i] in the pronunciation of all my Tonga informants. The distinction English people make between [i:] and [I] is not perceived auditorily by many Tonga speakers. In terms of the semantic distinctions which the two phonemes signal, the Tonga speaker relies mainly on the context of the utterance rather than the difference in sound.

English Short Front Vowel /ɛ/.

Group 1

Word	Informants: 1	2	3	4
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]
net	[nɛt]	[nɛt]	[nɛt]	[nɛt]
get	[gɛt]	[gɛt]	[gɛt]	[gɛt]
bed	[bɛd]	[bɛd]	[bɛd]	[bɛd]

Group 2

	Informants: 1	2	3	4
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]
net	[nɛt]	[nɛt]	[nɛt]	[nɛt]
get	[gɛt]	[gɛt]	[gɛt]	[gɛt]
bed	[bɛd]	[bɛd]	[bɛd]	[bɛd]

No significant difference was noted between this sound and that produced by the informants.

English Short Front Vowel /æ/ Group 1

Word	Informants:- 1	2	3	4
catch	[katʃ]	[katʃ]	[kotʃ]	[katʃ]
back	[bak]	[bak]	[bak]	[bak]
sadly	[sadili]	[sadili]	[sadili]	[sadili]
perhaps	[pəhaps]	[pəhaps]	[pəhaps]	[pəhɛ

Group 2

Word	Informants:- 1	2	3	4
catch	[katʃ]	[katʃ]	[katʃ]	[katʃ]
back	[bak]	[bak]	[bak]	[bak]
sadly	[sadli]	[sadili]	[sadili]	[sadəli]
perhaps	[pəhæps]	[pəhaps]	[pəhaps]	[pəhaps]

Almost all the informants whose pronunciation is shown in this chapter pronounced English [æ] like the Tonga open front vowel [a], a smaller number whose speech is included in the appendix produced an [ɛ] sound. Only one informant of the eight used for this chapter produced the [æ] sound, in one instance, in the word perhaps [pəhæps], but he pronounced the same sound as [a] in catch, back and sadly.

The English [æ] sound is one of those which a Tonga speaker finds very difficult to produce, coming as it does between the half open and the open area. A Tonga speaker is accustomed to produce a sound either in the half open area or in the

open area and nothing in between. Therefore the sound a Tonga speaker produces for the English /æ/ depends on whether to him, the [æ] is auditorily nearer to his [a] or [e] sounds? It may also depend on who the sound is learned from, in general most Zambian teachers tend to use [a] for [æ] and among the English speaking peoples, the Americans use [ɛ] while among the British English speakers Gimson reports that the R.P. /ɛ/ and /æ/ are increasingly coming closer to each other in quality so that [æ] is something nearer to [ɛ] in some peoples' speech. In general however most Tonga speakers, as is illustrated by our informants, tend to use the Tonga open front vowel /a/ for English /æ/.

English Long Back Vowel /ɑ:/ :

Group 1

Word	Informants:- 1	2	3	4
farmers	[famɔz]	[famɔz]	[famɔz]	[famɔz]
parts	[pats]	[pats]	[pats]	[pats]
laughed	[laf'd]	[laf'd]	[laf'd]	[laf'd]
market	[ma:kɔt]	[makɔt]	[makɔt]	[makɛt]

Group 2

Word	Informants:- 1	2	3	4
farmers	[famz]	[famɔz]	[famɔz]	[famɔz]
parts	[pats]	[pats]	[pats]	[pats]
laughed	[laft]	[laf"d]	[laf"d]	[laf"d]
market	[maket]	[maket]	[maket]	[maket]

English Long Back Vowel /ɑ:/ : All the informants quoted in this section used the Tonga open front vowel [a] for the English [ɑ:] sound . It is difficult to say whether most speakers of Tonga as a first language find this sound difficult to produce or whether they are just unaware of its back quality. English [ɑ:] shares one quality with the Tonga [a], they are both open vowels but that is all they have in common, [ɑ:] is a back vowel while [a] is front, and [ɑ:] is much longer than [a]. But perhaps the fact that they have this one feature in common tends to mislead the Tonga speaker into believing that they are exactly the same and he therefore reproduces the Tonga one without any modification to suit the sound in the target language.

English Short Vowel /D/ :

Group 1

Word	Informants:; -1	2	3	4
hot	[hot]	[hot]	[hot]	[hot]
rock	[lok]	[rok]	[ɾok]	[ɾoki]
dog	[dog]	[dog]	[dog]	[dog]
cock	[kok]	[kok]	[ko:ki]	[kok]

Group 2

Word	Informants:- 1	2	3	4
hot	[hot]	[hot]	[hot]	[hot]
rock	[rok]	[rok]	[rok]	[rok]
dog	[dog]	[dog]	[dog]	[dog]
cock	[kok]	[kok]	[kok]	[kok]

English Short Vowel /ɒ/ : All the informants produced the sound [o] for the English /ɒ/. The difference between the English /ɒ/ and the [o] sound produced by the informants is more in quality than in quantity. The informant s'sound is closer and more rounded than the English which is open with lip rounding.

English Long Back Vowel /ɔ:/

Group 1

Word	Informants:- 1	2	3	4
because	[bikos]	[bikos]	[bikos]	[bikos]
morning	[moniŋ]	[moniŋ]	[moniŋ]	[moniŋ]
caught	[kot]	[kot]	[kot]	[kot]
water	[wotə]	[wotə]	[wotə]	[wotə]

Group 2

Word	Informants:- 1	2	3	4
because	[biɣoz]	[bikoz]	[bikos]	[biɣos]
morning	[moniŋ]	[moniŋ]	[moniŋ]	[moniŋ]
caught	[kot]	[kot]	[kot]	[kot]
water	[wotə]	[wotə]	[wotə]	[wotə]

English Long Back Vowel /ɔ:/ All the informants produced the same closed and rounded [o] as they produced for English /ɒ/. The same difficulty that Tonga speakers encounter with English /i:/ and /ɪ/ seems to apply here. English has three sounds in the half open and open back area where as Tonga has one between the half close and

half open area, therefore, any sound in this back area which is accompanied by lip rounding regardless of whether it is slight or medium as English /ɒ/ and /ɔ:/ will be acoustically associated with the Tonga back vowel /o/ which is much closer and involves more lip rounding than the two English sounds. In addition to this the Tonga /o/ is much shorter than the English /ɔ:/.

English Short Back Vowel /ʊ/: Group 1

Word	Informants:- 1	2	3	4
put	[put]	[put]	[put]	[put]
book	[buk]	[buk]	[buk]	[buk]
look	[luk]	[luk]	[luk]	[luk]
full	[fu:]	[fu:]	[fu:]	[ful]

Group 2

Word	Informants:- 1	2	3	4
put	[put]	[put]	[put]	[put]
book	[buk]	[buk]	[buk]	[buk]
look	[luk]	[luk]	[luk]	[luk]
full	[ful]	[ful]	[ful]	[fvt]

English Short Back Vowel /ʊ/: Almost all the informants produced [u] for English. One informant in Group 2 produced [ʊ] for the word full but then he produced the same sound for the word food. The difference between the English /ʊ/ and the [u] sound the informants produced is that the [u] is tense and the tongue is in a more retracted

than for the English /ʌ/ which is produced with the muscles loosely held and the tongue position between the back and the centre.

English Long Back Vowel /u:/

Group 1

Word	Informants:- 1	2	3	4
whose	[huz]	[huz]	[huz]	[huz]
soon	[sun]	[sun]	[sun]	[sun]
food	[fud]	[fud]	[fud]	[fud]
use	[juz]	[juz]	[juz]	[juz]

Group 2

Word	Informants:- 1	2	3	4
whose	[huz]	[huz]	[huz]	[huz]
soon	[sun]	[sun]	[sun]	[sun]
food	[fud]	[fud]	[fud]	[fu:d]
use	[juz]	[juz]	[juz]	[juz]

English Long Back Vowel /u:/ All the informants produced the same sound [u] for long [u:] as they produced for [ʊ]. The [u] sound is much nearer in quality to the English [u:] than [ʊ], but in length it is equivalent to [ʊ]. The back close area, like the front close and the back half open areas, is one of those where Tonga

has one vowel sound to two of English. As in the last two instances both English vowel sounds will have a measure of auditorig resemblance to the Tonga sound, for instance the Tonga /u/ is quantitatively equivalent to the English/ʊ/ and qualitatively nearer to English/u:/. Therefore both English/ʊ/ and /u:/ are associated with the Tonga /u/ in the minds of the Tonga informants and pronounced as such.

English Long Central Vowel /ɜ:/ Group 1

Word	Informants:- 1	2	3	4
first	[fɛst]	[fɛst]	[fɛst]	[fɛst]
earth	[ɛθ]	[ɛθ]	[ɛθ]	[ɛθ]
learned	[rʷɛn'd]	[ɾɛn'd]	[rʷɛn'd]	[rʷɛn'd]
bird	[bɛd]	[bɛd]	[bɛd]	[bɛd]

Group 2

Word	Informants:- 1	2	3	4
first	[fɜ:rst]	[fɛst]	[fɛst]	[fɛst]
earth	[ɛ:θ]	[ɛθ]	[ɛθ]	[ɛθ]
learned	[lɛn'd]	[lʷɛn'd]	[lɛni'd]	[lɛnid]
bird	[bɜ:rd]	[bɛd]	[bɛd]	[bɛd]

English Long Central Vowel /ɜ:/: Almost all informants pronounced this vowel as [ɛ] in bed. One informant in Group2 pronounced first as [fɜ:rst] and bird as [bɜ:rd], but pronounced the rest of the words containing this vowel with an [ɛ] sound. The English central vowel /ɜ:/ is a source of difficulty not only to my informants but to many Tonga speakers. The main reason for this is because in the Tonga vowel system

the central area is completely blank, that is there are no sounds produced in this area, the Tonga vowels being either front or back. This does not mean however that it is impossible for a Tonga speaker to produce a central vowel of the English /ɜ:/ type, but that it needs a lot of effort and practice, to be able to produce a sound in an area that is normally non-functional. The results of our informants' performance show that all of them used the sound[ɛ] for/ɜ:/ . [ɛ] and[ɜ:] have one feature in common and that is that they are both in the half close, half open are and that gives them an acoustic resemblance that might have obscured the central quality of[ɜ:] . We have seen how the English open back vowel /ɑ:/ is easily replaced by the Tonga open front vowel [a] simply because of the open quality which the two vowels share, the same thing seems to happen with[ɛ]: and[ɜ:]

English Short Central Vowel /ə/ : Group 1

Word	Informants:- 1	2	3	4
water	[wotə]	[wotə]	[wotə]	[wotə]
perhaps	[pəhaps]	[pəhaps]	[pəhaps]	[pəhɛps]
towards	[təwadz]	[təwadz]	[təwadz]	[təwadz]
fishermen	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]	[fiʃəmən]

Group 2

Word	Informants:- 1	2	3	4
water	[wotə]	[wotə]	[wotə]	[wotə]
perhaps	[pəhæps]	[pəhaps]	[pəhaps]	[pəhaps]
towards	[təwɔ:dz]	[tuwadz]	[təwadz]	[təwadz]
fishermen	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]

English Short Central Vowel /ə/: Perhaps because of its occurrence in unstressed positions it has been difficult to determine the exact nature of the vowel produced by the informants. However it did seen to me that the correct [ə] sound was produced by the informants in the words perhaps and towards, while a sound with a much more open and frontal quality was heard in the words fishermen and water.

English Open Central Vowel /ʌ/ : Group 1

Word	Informants: 1	2	3	4
covered	[kəvəd]	[kəvəd]	[kəvəd]	[kəvəd]
but	[bət]	[bət]	[bət]	[bət]
money	[mən]	[mən]	[mən]	[mən]
enough	[inəf]	[inəf]	[inəf]	[inəf]

Group 2

Word	Informants:- 1	2	3	4
covered	[kəvəd]	[kəvəd]	[kəvəd]	[kəvəd]
but	[bət]	[bət]	[bət]	[bət]
money	[mən]	[mən]	[mən]	[mən]
enough	[inəf]	[inəf]	[inəf]	[inəf]

English Open Central Vowel /ʌ/: All the informants used open front [a] for /ʌ/. [a] and [ʌ], like [ɛ] and [ɜ:] have one feature in common, and that is that, they are both open vowels.

English Diphthongs:

Group 1

	Word	Informants:- 1	2	3	4
/eɪ/	same	[sɛːm]	[sɛm]	[sɛm]	[sɛm]
	lakes	[lɛks]	[ɾɛks]	[ɾwɛks]	[ɾwɛks]
	name	[nɛːm]	[nɛm]	[nɛm]	[nɛm]
/ɛə/	bare	[bɛə]	[bɛə]	[b̥ɛə]	[bɛə]
	there	[ðɛə]	[ðɛə]	[ðɛə]	[ðɛə]
/aɪ/	time	[taɪm]	[taɪm]	[taɪm]	[taɪm]
	knife	[naɪf]	[naɪf]	[naɪf]	[naɪf]
	island	[aɪland]	[izland]	[a]	[ailend]
/ɒɪ/	soil	[soit]	[soit]	[soit]	[soit]
	pointed	[pointid]	[pointəd]	[pointəd]	[pointəd]
/aʊ/	mountains	[mauntenz]	[mauntenz]	[mauntenz]	[mauntenz] ↑
	how	[hau]	[hau]	[hau]	[hau]
	out	[aut]	[aut]	[aut]	[aut]
/əʊ/	boat	[boːt]	[boːt]	[b̥oːt]	[boːt]
	go	[go]	[go]	[go]	[go]
	know	[no]	[no]	[no]	[no]
/ɪə/	near	[nia]	[nia]	[nia]	[nia]
	spear	[spiə]	[spiə]	[spiə]	[spiə]
/ʊə/	sure	[ʃua]	[ʃua]	[ʃua]	[ʃua]

English Diphthongs:

Group 2

	Word	Informants: - 1	2	3	4
/eɪ/	same	[sɛm]	[sɛm]	[sɛm]	[sɛm]
	lakes	[lɛɪks]	[rwɛɪks]	[lɛɪks]	[leiks]
	name	[nɛm]	[nɛm]	[nɛm]	[neim]
/ɛə/	bare	[bɛə]	[bɛə]	[bɛə]	[bɛə]
	there	[ðɛə]	[ðɛə]	[ðɛə]	[ðɛə]
/aɪ/	time	[taɪm]	[taim]	[taim]	[taim]
	knife	[naɪf]	[naif]	[naif]	[naif]
	island	[aɪland]	[ailand]	[ailand]	[ailand]
/ɔɪ/	soil	[soit]	[soit]	[soit]	[soit]
	pointed	[pointəd]	[pointəd]	[pointəd]	[pointəd]
/aʊ/	mountains	[mauntenz]	[mauntenz]	[mauntenz]	[mauntenz]
	how	[hau]	[hau]	[hau]	[hau]
	out	[aut]	[aut]	[aut]	[aut]
/əʊ/	boat	[bout]	[bout]	[bo:t]	[bo:t]
	go	[go]	[go]	[go]	[go]
	know	[no]	[no]	[no]	[no]
/ɪə/	near	[nia]	[nia]	[nia]	[nia]
	spear	[spia]	[spia]	[spia]	[spia]
/ʊə/	sure	[ʃua]	[ʃua]	[ʃua]	[ʃua]

English Diphthongs: It has been noted in the description of English vowel sounds that English has eight diphthongs. Of the eight, two of them seem to have been particularly difficult for the informants and these are /eɪ/ and /əʊ/, the others /ɛə/, /aɪ/, /aʊ/, /ɔɪ/, /iə/ and /ʊə/ seem to have been pronounced well. The only comment to be made is that /ɪə/ tended to be [ɪɑ] and /ʊə/ = [uɑ] and /ɛə/ = [ɛɑ] in the informants' pronunciation. The diphthongs /eɪ/ and /əʊ/ were in most cases reduced to pure vowels and in some cases these vowels showed lengthening. The first element [e] of diphthong /eɪ/ took the place of the whole diphthong, while in /əʊ/ a sound [o] seems to take the place of the whole diphthong, and it is the [o] which has tended to be lengthened in the word boat and in words like sold, cold, where the [l] has been omitted. In spite of the fact that diphthong sounds are absent in the informants' first language, it has been demonstrated that they are able to produce six out of the eight English diphthongs tolerably well; consequently the reason for producing pure vowel sounds for /eɪ/ and /əʊ/ may lie elsewhere. The explanation may lie in the nature of the diphthong sounds themselves. In our description of English diphthong sounds we noted that they consist of two elements, the first element being the starting point, and the second, the point in the direction of which the gliding movement is made. It has also been noted that the first part is the more prominent of the two in terms of length and the stress pattern of the syllable in which the diphthong occurs. The second element is described as being brief and transitory in nature. Perhaps this last point should be qualified to the effect that the brevity and transitory nature of the second element may vary according to the distance between the starting point and the point towards which the gliding movement is made. In the case of the /eɪ/ diphthong the starting point is in the half close front area going towards the centre of the close front area. The gliding movement

between [e] and [ɪ] is indeed so brief and transitory that the length concentrated on the first element, can easily obscure the second to some one who is not intimately acquainted with the vowel system of the language. On the other hand the distance involved in gliding from open to close in /ɑɪ/ , or open to close in /ɑʊ/ , back to front in /ɔɪ/ , and the difference in quality between the first and second elements are so obvious even to someone whose first language may have no such combination of sounds. In the case of the three centering diphthongs /ɪə/ , /ɛə/ , and /ʊə/ which begin from close, half close positions moving in the direction of a more open variety of the central vowel [ə] , the [ə] sound, because of its more open nature, has been heard as [ɑ] by the informants so that the movement made by the tongue between [ɪ] and [a] [ɛ] and [a] and [ʊ] and [a] in the informants' [iɑ] [ɛɑ] and [uɑ] sounds is still greater than that between [e] and [ɪ] in [eɪ] .

The case of the /əʊ/ diphthong which has been replaced by [o] may perhaps be explained by an observation made by Gimson in which he states that a more conservative variant of the /əʊ/ diphthong has its starting point in a more retracted region, [o] or [ö] and the whole glide is accompanied by increasing lip rounding. It should be observed here that a diphthong of the [ou] type has been noted among the informants mainly from the second group. The fact that the [ʊ] has been omitted in most of the informants pronunciation may be explained in the same way as the [eɪ] diphthong, that the movement of the tongue from [o] or [ö] to [ʊ] is so brief that it may not be perceived acoustically by someone who has no intimate knowledge of the sounds of the language. Gimson's observation brings up the question of from whom the informants may have learnt the sound. If from their local Zambian teachers then what sort of sound was made by those who trained the teachers?

In conclusion it has been observed that the Tonga informants' experienced more difficulties in pronouncing English vowels than they had with the English consonants. The main reason seems to be that, even though Tonga has five pure vowels against twelve of English, each one Tonga vowel sound shares one or more features with two or more English vowels. This similarity seems to obscure the difference in quality of the vowel, and leads the informants into believing that, the English sounds they have heard are like their own.

There is also a pattern that seems to emerge which determines what English vowels will be replaced by which Tonga ones. The main factor which seems to determine this pattern is the degree to which the tongue is raised. Thus if two or more English vowels share the quality of being close or half close, with one Tonga vowel than those English vowel sounds will be replaced by that Tonga vowel. For instance':

English /i:/ and /ɪ/ ⟶ Tonga /i/

English /ɛ/, /ɜ:/ and /æ/ ⟶ Tonga /e/

English /æ/, /ɑ:/ and /ʌ/ ⟶ Tonga /a/

English /ɒ/, and /ɔ:/ ⟶ Tonga /o/

English /ʊ/ and /u/ ⟶ Tonga /u/

respectively in the informants' speech. The exact point where the tongue is raised whether front, centre or back, does not seem to exert any significant influence on the informants' pronunciation as is shown by the fact that English back /ɑ:/ is replaced by Tonga /a/ and English central /ɜ:/ is replaced by the front /e/, English /ʌ/ and sometimes /ə/ are replaced by front /a/.

As far as the English diphthongs are concerned it has been found that on the whole these have been pronounced tolerably well except the /eɪ/ and /əʊ/ diphthongs which have been replaced by pure vowels [ɛ] and [o].

There is no significant difference in the mastery of English vowels between the two groups. The same strategy of using the degree of tongue raising to determine the Tonga vowel which is to replace the English ones seems to have been employed by both groups and consequently there has been no difference in the type of vowels produced by the informants in both groups.

iv. PERFORMANCE IN ENGLISH STRESS AND INTONATION

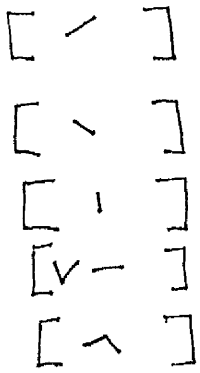
With the foregoing discussion on Tonga and English suprasegmental features in mind, the same passages from two grade 5 New Zambia Primary Course English Readers as used in Chapter 4 p 93 were given to the same groups of informants whose details are given on the same page. Each member of the two groups was asked to read the passages and tape-recorded.

The object of the exercise is to determine how far the English suprasegmental features displayed in the reading of the Tonga children deviate from those in Standard English and to see whether these deviations could be explained in any way. The exercise will also determine whether there are any significant differences between the two groups ie whether some of the divergencies disappear as the children progress higher on the educational ladder and are increasingly exposed to the literature written in the English language and also to first language speakers of English. The children in Group 1 have had four full years of formal education and are in their fifth, those in Group 2 have had eight and are in their ninth.

RESULTS:

GROUP 1: On the whole the children in this group tended to read in the same slow way picking out each individual word at a time, and without displaying any appreciable difference from each other in the way of stress and pitch variations. Consequently only a few representative samples will be given here as examples:

MARKING SYSTEM



(OR UNMARKED)

HIGH TONE

LOW TONE

SLIPPED HIGH TONE

RISE AT PAUSE

HIGH-LOW (Falling)

THE FIRST FARMERS

PASSAGE 1

INFORMANT 1

GROUP 1

Mên learnedi how to farm a long time ago. But a very long time ago, there were no farms on the earth. There were no farms on the earth, because there was no soil on the earth. The earth wasn't always the same as it is now.

INFORMANT II

Long, long ago, there were no people or animals or plants on the earth. The earth was very, very hot. There were no-people or animals or plants because the earth was too hot. But after many years, the earth became cold and it was covered with bare hardi rock.

THE THREE FISHERMEN

INFORMANT III

One morning, three fishermen went outu in their boat. They wanted to catch a lot ofu fish. "If we catch a lot of u fish" said one of u the fishermen-whose name wasi Mumbi, "we ll get a lot ofu money and then we can get a new net.

They ónly hâd thrée nêts. Óne of thém was bróken. "We wón't ûse the bróken nêt", sâid Mwámbá. 'You cán't cátch a bí g fîsh in a bróken nêt."

THE THREE FISHERMEN INFORMANT IV

Só they wént nêar the îsland ándi thréw ôut the bróken net.
They waítedi ándi lóokedi át the îsland. They áte some ófù thêir fóòd ándi dránk some wáter. But they dídn't sêe ány fîsh. Whén it was neárly night i Múmbi sâid, "Wêll, we must púll the nêt íntò the bôat agâin nôw. It's néarly night, and we wón t cátch any fîsh nôw."

Generally the pitch pattern of individual words tend to be high-fall throughout as the markings in the passages illustrate. This pattern is by no means limited to polysyllabic words only but even some monosyllables whether short or long and irrespective of whether an epenthetic vowel is added or not, display a high-falling pitch. The following are some examples of monosyllables with high-falling pitch:

PASSAGE 1:	mên	fârms	êarth	hôt	rôck
PASSAGE 2:	bôat	fîsh	sâid	nêt	
	fôod	sêe	of (u)		

To understand why the informants adopted this pattern, it is perhaps necessary first to make a quick review of the ways children acquire knowledge of the English language in Zambia. Most Zambian children are introduced to the English language in the classroom, very few of them learn the language through spontaneous play with other children with a speaking knowledge of the language. In the classroom

a number of repetition drills take place. The main aim is to enable the child to understand, read, write and speak the language. The main emphasis is on the first three because these are the main skills required to pass a written examination. The school therefore is the main centre where the structure of the language is learnt and new vocabulary picked up. The methods used to teach the language to the children are therefore crucial in understanding the pattern developed and used by them. The following is the procedure of several English lessons observed in the course of my fieldwork.

A list of words picked from a passage which the teacher intended to deal with was put on the board. The list consisted of new vocabulary to be introduced to the pupils. The teacher then went through the list pronouncing each word at a time - to the end. Then she did the same thing again but this time the pupils repeated after her. After this the teacher read the passage through, then some children did likewise, reading a paragraph each from the passage. This was followed by some exercises based on the passage. Substitution drills using the new vocabulary in sentences were performed. The teacher wrote the substitution tables on the board, read the sentences out, while the children repeated after her. Lastly, these were copied in the children's workbooks.

The main point which relates this to the discussion on the pitch patterns of individual words in the children's reading exercise is the method used to introduce new vocabulary to the class. New vocabulary is introduced as a list of items in isolation. The child therefore learns the language by hearing and repeating individual words first before he learns to use them in a sentence. But as was

indicated in the discussion on English stress, the citation form of a word, ie the form in which it is pronounced when considered in isolation is rarely maintained when the word appears in a sentence. There are, as we have seen shifts in the stress patterns in a sentence, therefore the form in which the word appears would be largely determined by the rhythmic requirements of the sentence and the importance of the word in it, in the way of conveying information. The Zambian child learns his new words in their citation form and it is in this form that the words become internalised and reproduced by him in all contexts, being unaware of the shifts of stress required in an English sentence.

The Zambian child has not the advantage of the native speaker's competence in the language to guide him. To clarify a little more what is meant by this, the writer had the chance of observing an eight year old native speaker of English read. The problems the child had involved the translation of graphic configurations into sounds, once this was done the child presumably relied on her knowledge of the grammatical pattern and semantic context of the sentence to get its stress and rhythm pattern correct. The same process was observed among Zambian children from Group 1 reading from a Tonga text, once they were able to associate the word with the sound, they used the same cues to get the tone patterning of words and the overall pitch of the sentence right. However, when the Zambian child is given an English text to read, apart from struggling with the graphics he has no such cues to guide him, unless of course he transfers some of those he would use in his mother tongue to the new language.

This brings us to the second point which might help to explain the high-fall pattern of individual words in the reading exercise. It has been stated that the Zambian child learns his new English vocabulary in its citation form, the citation form of a monosyllable in isolation is stressed, and the polysyllabic words in isolation will have at least one stressed syllable. The results of the reading exercise tend to show that the stress which occur on these words when considered individually are equated to high tone while the weak stresses come out as low tone. In our discussion of stress in Tonga, it was stated that stress is bound to tone, and that stress is found whenever a high tone comes before a low tone, the syllable on which the high tone falls is stressed. We have also illustrated that in certain contexts stress can replace high tone in Tonga. It can therefore be supposed that stress and high tone do not only have a close relationship of being bound together in one syllable but the relationship can also be an interchangeable one in the mind of a Tonga speaker. If this is the case then it explains why English stress came out as high tone in the reading exercise.

We also stated in our discussion on the significance of tone in Tonga the fact that each lexical item in the language has a basic underlying tone pattern of its own which it maintains even when incorporated into a sentence and can only change in certain contexts. It is just conceivable that the informants being used to this type of patterning in their first language, once they adopt a certain pattern for the English words, tend to maintain it throughout the sentence. If it were a Tonga sentence, whose syntactical organization they can manipulate easily, they would know from the context when the basic tone pattern of an individual word needs changing. But in this case they are grappling with an unfamiliar system and they have nothing to act as a signal as to which word needs stressing or saying quickly as the rhythm of the English sentence requires.

It has been stated that English weak syllables have been equated with low tone in the reading exercises. But in the discussion on English stress we indicated that unstressed syllables in English are said faster than the stressed ones so that it is possible as it were for the listener to pick out the important words in an utterance. In Tonga on the other hand, the fact that a syllable is uttered on a high or low pitch has no significance in terms of the interval spent in uttering it. A syllable said on a low pitch will take as much time to say as a syllable on high pitch. This is why Tonga is classified as a syllable timing language. When this pattern is transferred to English, which is stress timing, as it has been in this case, it gives the impression of all syllables being evenly stressed, and this is not in conformity with the requirements of English rhythm.

Oneaspect which is rather puzzling in this exercise is the fact that some monosyllables have come out with a high-low pitch. One would have expected them to turn out with a high tone only. Perhaps one explanation to this anomaly may lie on the syllabic structure of Tonga. Tonga has an open syllable structure, that is no word may be closed by a consonant sound. English on the other hand has both open and closed syllables. It is to be noted that, almost all the monosyllables which came out with a high-falling pitch in the informants' reading, are closed by consonant sounds except the word see. It has also been observed that the informants adopted a particular pitch pattern high-fall for the polysyllabic words similar to that of the monosyllables, which they have maintained throughout. It is possible that the Tonga informants used to the open syllable structure of their first language, but at the same time aware that they are dealing with a language whose system is different, tried sometimes successfully, to treat the words as monosyllables as such at the phonetic

level. But that at pitch level, they unconsciously treated them as dissyllabic words, which they would be in Tonga, and assigned a pitch pattern similar to that they used for the polysyllabic words. Indeed the fact that at othertimes the informants failed to treat some of the words with closed syllables as such,even at the phonetic level gives weight to this view. In a number of cases a final vowel is added. e.g.

first (i)	learned (i)
hard (i)	hot (i)
of(u)	out(u)
rock(i)	and(i)
waited(i)	

It has also been suggested that since the Tonga child is in this case reading slowly, he may be treating each individual word as sentence final. It has been observed before in the chapter on Tone In Tonga that generally a Tonga sentence ends in downdrift or 'final crumbling' on a sentence final high tone. English stress comes out as Tonga high tone and since a monosyllable in isolation in English is always in stressed form, it is uttered with a high tone by a Tonga speaker, and being final, it will be in 'final crumbling' context.

It is possible that a combination of these two factors may be at work and that to try and understand the pitch patterns assigned to individual words by the informants, one will have to take both factors into consideration.

However, it is worth looking at the older children's reading performance at this stage to see whether there is any appreciable difference in their pitch treatment of the words. The following are extracts of their reading performance:

THE FIRST FARMERS

PASSAGE 1

INFORMANT I

Men learned how to farm a long time ago. But a very long time ago, there were no farms on the earth. There were no farms on the earth because there was no soil on the earth. The earth wasn't always the same as it is now. Long, long ago, there were no people or animals or plants on the earth. The earth was very, very hot.

INFORMANT II

There were no people or animals or plants because the earth was too hot. But after many years, the earth became cold, and it was covered with bare, hard rocki. There were mountains of rocki. There was no soil on the rocki. There were no plants or animals or people on this rocki. There were only streams, and lakes and bare, hard rocki.

THE THREE FISHERMEN

PASSAGE 2

INFORMANT III

One morning, three fishermen went out in their boat. They wanted to catch a lot of fish. "If we catch a lot of fish", said one of the fishermen, whose name was Mumbi, "we'll get a lot of money, and then we can buy a new net." They only had three nets, one of them was broken. "We won't use the broken net," said Mwamba. "You can't catch a big fish in a broken net." "All right," said Sitali, "we'll fish with our strong nets." So they went out a long way on the water, and threw-out the strong nets. But they didn't throw-out the broken net. They soon caught a lot of small fish, and pulled the nets back into the boat.

INFORMANT IV

So they went near the island and threw out the broken net. They waited and looked at the island. They ate some of their food, and drank some water. But they didn't see any fish. When it was nearly night, Mumbi said, "well, we must pull the net into the boat again now. It's nearly night, and we won't catch any fish now." So they started to pull the net back into the boat. It was very, very heavy. They pulled and pulled, and when the net was nearly at the side of the boat they saw something in the net. A very big fish was caught in the net. "Kill it wi(i) your knife", said Mwamba to Sitali. Sitali nearly fell into the lake while he was killing the fish.

Generally this group read more confidently and faster than the first. The problems of associating the written word with sound have been overcome by now. Also at this stage the children have control of many grammatical structures of the language which they can easily produce in written form but perhaps not so much in speech. Despite all this however, the pitch patterns of this group are no different from those of Group 1. Individual words still maintain the high-fall pitch pattern we have observed in the younger children's reading performance. The high-falling pitch pattern assigned to some monosyllables by Group 1 remains unchanged. The only observable difference seems to be that with the more fluent readers, the high-fall pitch of monsyllables tends to come towards a pause or end of sentence normally falling on the last two or last item before the pause. For example:

"But a very long time ago, there were no farms
on the earth. There were no farms on the earth,
because there was no soil on the earth.

There were no people or animals or plants
because the earth was too hot. But after
many years, the earth became cold, and it
was covered with bare hard rocki.

This might confirm the notion that the Tonga informant is applying the downdrift feature of the Tonga sentence to the English one. In Group 1, the informant was reading slowly and therefore tended to treat each individual word as sentence final ie with a final crumbling. In this case however, the informant is reading fast so the feature is shifted towards a pause or end of the sentence as it would be in a Tonga sentence. On the other hand most informants in this group read very much like informant No. IV, with high-falling pitch on the following monosyllables:

near, net night, food, did i n't, said, fish,
well, boat, again, now, withi , your

This was regardless of whether it was in the middle of a sentence or before a pause, and yet these informants were reading just as fast as the others, and so they cannot be said to be treating each individual word as sentence final like the slow readers in Group 1. This takes us back to the notion that perhaps the informant is failing to treat the words with closed syllables as such at the pitch level, and there is still some evidence that even at the phonetic level this process is still going on in this group.

One other pitch pattern which seemed to be common with informant No. III, but which was not very prevalent among the others, was the falling rising pitch on some monosyllables. The pattern seemed to be a prepausal one, although the pauses in this case are not where one would expect them to be ie they do not coincide with the punctuation in the passage. Examples follow:

"Well'll fish, with our strong nets

.... and threw, out the strong nets.

But they didn't throw out the broken net.

The nets were still, full of fish.

These fish are too small.

We won't get much money for these when they are sold.

On the whole therefore there seems to be no improvement on the informants' mastery of English sentence stress even after eight years of formal education during which English is used as a medium of instruction. The informants' betray no sign of understanding or awareness of the function of stress and rhythm in the English sentence.

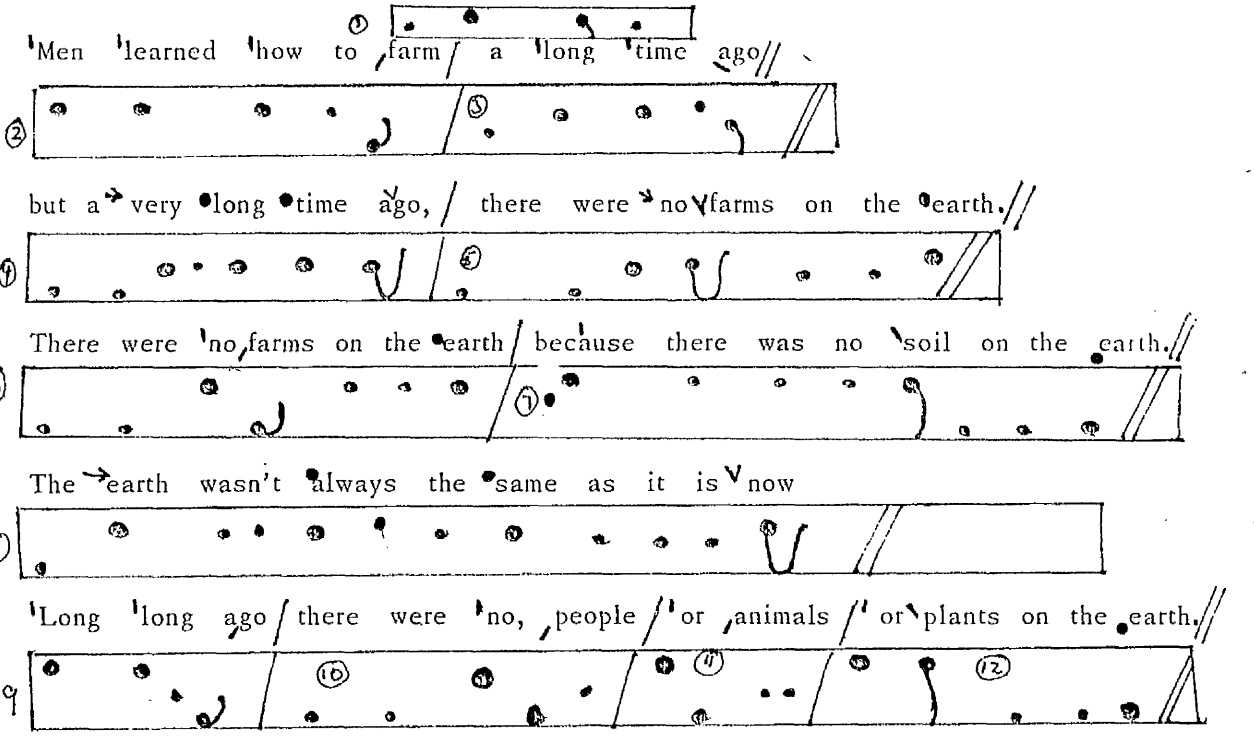
So far, using the reading exercise, I have tried to measure the informants' performance on English stress, but as has been stated before stress in English speech is closely bound up with intonation. Those parts of an utterance to which the speaker wants to draw the listener's attention, are rendered prominent not only by stressing, but also by use of significant pitch.

In the analysis of English intonation we stated that a word group must have a nucleus which bears the nuclear tune of the whole group, and that it may or may not have a head, prehead or tail. A head is seen as consisting of the first stressed syllable up to the nucleus, the prehead, of all unstressed syllables up to the head, and the tail, of all syllables after the nucleus. Altogether ten tone groups in both emphatic and unemphatic forms have been distinguished. Each tone group consists of a combination of the various parts of a tune summarized above. This means that different tunes can be employed to read a simple story like The First Farmers and besides that, each tune

used will carry some sort of attitudinal meaning.

Here is a part of The First Farmers read by an English speaker and analysed in intonation groups using O'Connor and Arnold's method:

THE FIRST FARMERS



About four tunes have been used in the six sentences above from The First Farmers. Some tunes have been used several times. The tunes used are as follows according to the number of intonation groups:

1) low drop -high head low fall

2) low bounce , -high head low rise

3) low drop - high head low fall

4) switch back ; -falling head fall rise

5) switch back -

6) low bounce high head low rise

7) high drop - high head high fall

8) switch back -falling head fall rise

9) low bounce - high head low rise

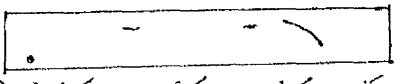
10) low bounce - high head low rise

11) low bounce - high head low rise

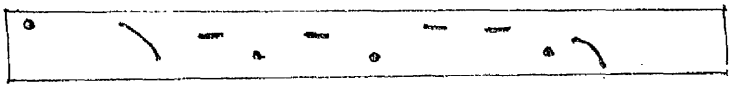
12) high drop - high head high fall

The informant's reading of the same lines is something like this:

THE FÍRST FÀRMÈRS

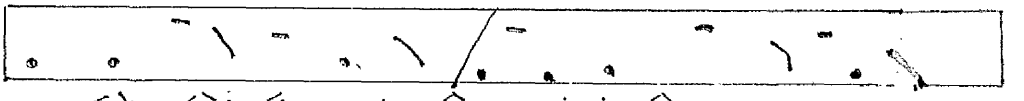


Mén learned how to farm a long time ago

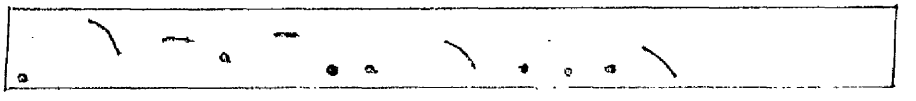


But a very long time ago, / there were nó fârms ón the earth

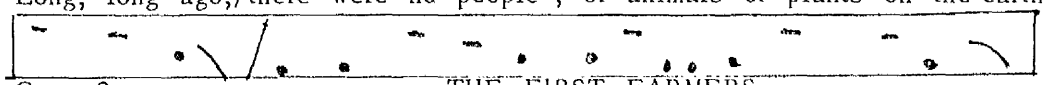
There were nó farms ón the earth / because there was nó soil ón the earth



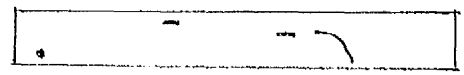
The earth wasn't always the same as it is now.



Lóng, lóng ágo,/there were nó péople , or ánimals or plánts ón the éarth

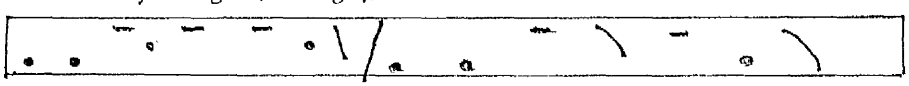


Group 2 THE FIRST FARMERS

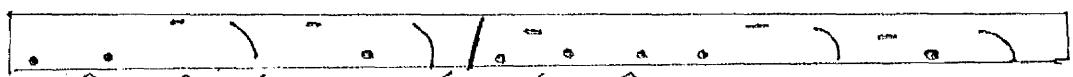


Mén learned how to farm a lóng time ago.

But a very lóng time ago,/there were nó farms ón the earth.

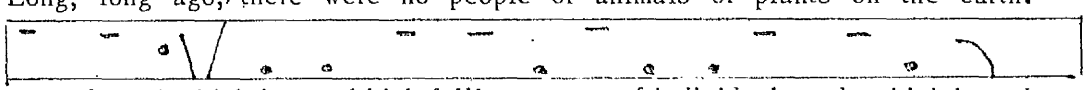


There were nó farms ón the earth,/because there was no soil ón the earth.



The earth wasn't always the same as it is now.

Lóng, lóng ago,/there were nó people or ánimals or plánts ón the earth.



Apart from the high-low and high-falling pattern of individual words which has already been observed, there is an overall pitch pattern superimposed on the lexical one. This pitch pattern starts on a high level becoming lower and lower towards a pause or end of the sentence. After a pause, the pitch level rises again and then goes lower - and lower to the end of the sentence. This overall pitch pattern is maintained throughout the passage by almost all the informants in both groups except three in Group 2 who showed some evidence of more variety in some parts of their reading of the second passage by showing traces of rising pitch as opposed to falling. However, these parts are not many, nor are they long, for the rest of the passage even these three informants conformed to the pattern adopted by the rest:

1) "well" [ ] low rise (as opposed to [ ])

2) "alright" [ ] low rise (as opposed to [ ])

3) "What shall we do now? [ ]

rise-fall (as opposed to [ ])

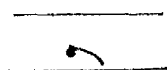
It is obvious that intonation patterns as understood in Standard English and as observed in the extract read by a first language speaker of English are far from the informants' grasp.

In terms of O'Connor and Arnold's analysis the informants' intonation pattern approximates to that of the sliding head. The sliding head is an emphatic form of the falling head. It is characterised by a series of falls one from each stressed syllable, instead of the one single fall of the unemphatic falling head. An example follows:

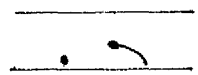
↘ Have a↘ bit of↘ sense

The high-low pattern used by the informants comes nearer to the above pattern with the English stressed syllables coming out as high tone and the unstressed ones as a low tone. What could be taken as the nucleus in the informants' intonation patterns approximates to the low fall nuclear tune without a tail in O'Connor and Arnold's analysis. Example of low fall:

No



I can't



It has been stated that in the informants' reading, the overall pitch becomes lower and lower towards a pause or end of sentence and the final crumbling as it were, is near to the low fall nuclear tune than anything else in the O'Connor and Arnold system. The analysis of the informants' intonation patterns in this way raises a number of points. Firstly the fact that according to O'Connor and Arnold's system the informants' patterns lack any segments which could be assigned to the tail, means

that the last item before the pause or end of sentence which contains the fall is automatically interpreted as the accented one, with a falling nucleus, in British English, thereby giving a distorted picture of the whole utterance. The informant, unaware of such a system in operation, does not intend any particular emphasis on the syllable which the British English speaker interprets as the focus of information.

Secondly, the fact that the sliding head is emphatic and is used by British English speakers mainly for expressions of exasperation, means that even the most neutral remark a Tonga speaker may make, if accompanied by the same intonation pattern as that displayed in the informants' reading would give the listener (if he were a British English speaker) the wrong impression of the speakers' feelings. Dr. H. Carter in her paper on "Intonation and Stress Patterns in Some Caribbean Creoles and British English", in which she makes reference in passing to the intonation patterns in the English speech of Africans' with a tonal language background, says this of the sliding head and stepping head of the British English system," Both these are 'emphatic patterns', hence to the English speaker they convey weight, intensity, gravity, forceful emotion, so that a casual remark such as "Isn't it a fine day?" takes on the air of a sinister challenge, a searching, testing question charged with great significance and requiring careful pondering before replying." It is quite obvious from this that a lot of misunderstanding can occur, with the speaker quite unconscious of the effect his utterance has on the listener. Because of the use of what approximates to British English emphatic heads by many Africans whose first languages are tonal, Africans have been mistakenly described as speaking in a 'harsh, ferocious, barking tone of voice,' which remark will annoy the African as much as his intonation annoys the English people.

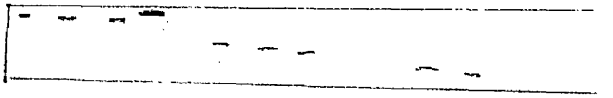
Thirdly, it must also be pointed out that the sliding head in O'Connor and Arnold's system is associated with the switch back tone group. It is normally found in combination with the fall-rise nuclear tune. In our analysis of the informants patterns, we found that their approximation to the sliding head was in conjunction with the low fall nuclear tune, a combination of which does not seem to exist in O'Connor and Arnold. It is also obvious from listening to their reading at both stages that their approximation to the sliding head and the low fall nuclear tune is not a conscious effort on their side to imitate English intonation, it seems to be a pattern which comes automatically to them. Perhaps to understand this pattern we shall have to go back to what we said about the Tonga sentence.

In the analysis of the suprasegmental features of Tonga we mentioned that one of the characteristic features of the Tonga sentence was down-drift. This feature is manifested by the falling of the mean pitch level throughout the sentence so that both the high and low tones at the beginning of the sentence are higher than they are at the end of it.

The Tonga sentence starts on a high pitch and descends step by step so that towards a pause or end of sentence the pitch has become very low even on high tones.

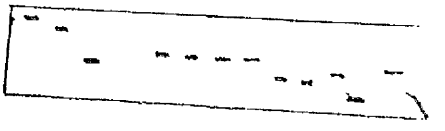
Examples:

Wákáúlá cisáni cákwe.



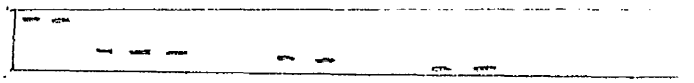
She bought her a cloth

Imwána wákáámbá ati, "íno bwáca líli"?



The child said, "when did the day break"?

"Téeulaya sunu yebo"?
"You are going today aren't you?



This is the system our informants are used to and when we compare it to the pitch analysis of their reading performances there is very little doubt as to the origins of the pattern. Dr. H. Carter in her analysis of a sampling of recorded texts from St. Vincent and other West Indian territories found similar pitch patterns in use there and she has this to say: .. "the most common pitch patterns showed close surface affinities with utterances from African tonal languages having two to three tonemes, sentence downdrift with or without assimilation processes giving rise to downstep (tone-slip), and 'crumbling' of final high tone".

This is presumably so, because most of the West Indian Creole speakers' speech habits come from ancestors who originally spoke tonal languages and these habits have been passed on from one generation to the next since then. If the intonation patterns of present West Indian Creole speakers who have not spoken a tonal language for centuries can still show strong signs of being influenced by a tone language, then this influence will be even stronger in the case of the Tonga informants who still speak a tone language as a first language.

The only difference there is between the results of my analysis of the Tonga informants pitch patterns and those of Dr. Carter's Caribbean subjects is that Dr. Carter's subjects apparently approximated to the Stepping head, the emphatic variant of the High Head in O'Connor and Arnold's system, plus the low fall nuclear tune, where as the Tonga informants approximated to the sliding head plus low fall nuclear tune.

To conclude this section therefore, it has been found that there is little difference between the informants in both groups with regard to the mastery of English suprasegmental features. It has been found that even after eight years of formal education using English as the medium of instruction the informants still persist in using the same patterns as informants who are four years below them. Perhaps this is not surprising when we think of how complex the whole system is. English stress has been defined as a 'mental pulse or beat', or as 'something the speaker does', which means that the actual process of sorting out which syllable should receive the stress and which one should not, in any particular utterance takes place in the speaker's subconscious. We have also shown on the section on the English suprasegmental features how the whole rhythm of the language is based on the stress system, ie the occurence of the stressed syllables at regular intervals forms the basis of the rhythm, and also how the intonation system of the language is bound to stress. This means that the Zambian child who learns the language at school would have to make a conscious effort to co-ordinate the various processes mentioned above in speech.

While acknowledging the importance of this aspect of the English language to international communication, it is believed by those who have devoted much thought to the subject that for the purposes of communication within Zambia, perhaps this aspect of the language can be dispensed with since there is no way of teaching it effectively. This belief is based on the assumption that Zambians have no problem in understanding each other through the medium of their own kind of English, that no Zambian for instance would interpret the intonation patterns of the Tonga informants which we have just looked at, in the way a British English speaker would, since the British English intonation system does not have the same significance to the Zambian. It is also believed

that only a handful of the total intake per year of Zambian school children will be required to use the English language at an international level when they finally leave school. So far no research has been done on the mutual intelligibility of Zambian English among Zambians from different language communities. However, it should be pointed out that, the writer, who is herself a Tonga speaker had no problem in understanding the speech of the Tonga informants from the stress and intonation point of view, whatever problems she had, were related to pronunciation of segmental phones and the fast speed at which some informants read.

SECTION 3 CHAPTER 5

DISCRIMINATORY PERCEPTION & PERFORMANCE

i. Vowels:-

We have so far dealt with the kind of sounds, stress and intonation patterns of English which the informants have learnt throughout the various stages of their education from their teachers (or otherwise), and with how far these diverge from standard English. We have found that on the whole the consonant sounds produced by the informants were rather closer to those of standard English than were their vowel sounds or pitch patterns. We attributed this fact to the presence, in the informants' first language, of sounds similar to those of English, and which can therefore be substituted for the English ones without altering the semantic content of the word in which the sounds appear.

The informants' pronunciation performance in English vowels revealed more significant differences from standard English pronunciation. It was found that the informants replaced two or three English vowels by one Tonga vowel if those English vowels shared the quality of closeness or openness with one Tonga vowel. The other features which distinguish English vowels from the Tonga ones have apparently been ignored by the informants.

At the suprasegmental level we found that informants in both groups have tended to replace English stressed and unstressed syllables by Tonga high and low tone respectively. The informants' pitch patterns showed a tendency towards down drift, a feature which is characteristic of the Tonga Tonal System. This feature, when analysed according to O'Connor and Arnold's intonation system showed approximation to that of the sliding head and low fall nucleus.[21]

The next exercise deals with the same aspects of the English language as those already looked at in the previous section, but concentrated on those areas where the informants' pronunciation performance showed more divergencies from standard English. Hence not much attention has been paid to the consonants in this section except the liquids /l/ and /r/. The areas which received emphasis were the vowels and the clusters.*

THE EXERCISE

A list of words containing minimal pairs and triplets:- (where ever possible) i.e. pairs or triplets of words which are different in respect of only one sound segment, - in this case the vowel -were read out by a speaker (who speaks a Standard Southern British variety of English) and tape recorded. Each item was read twice with a pause in between. The minimal pairs and triplets were arranged in such a way that each pair or triplet contained the English vowel sounds or diphthongs which the informants tended to replace by one or other of the Tonga vowel sounds in the previous section. The tape was played to one informant at a time. The informant was asked to repeat after the recorded model and to try and imitate as closely as possible what the informant thought he had heard said. The responses of each informant were in turn tape recorded.

AIM OF EXERCISE:- This exercise was designed to test two aspects. First it was to determine whether the Tonga informant can perceive, acoustically, the distinction made by the English speaker between the various English vowels and diphthongs. Secondly it was to determine whether or not the informant would be able to reproduce the sound, making the appropriate distinctions.

RESULTS OF EXERCISE:-

So far we have tended to use four informants from each group as a representative sample, because of the similarity of what they have produced, and presented the rest of the results in an appendix. The results of this exercise however, do not show the same uniformity and for this reason a different method of displaying the results will be adopted, to take account of each informant's responses.

ENGLISH VOWELS /i:/ AND /I/:-

The following are the minimal pairs with the above vowels which were pre-recorded, the tape being subsequently played to the Tonga informants for repetition:-

/i:/	/I/
leave	live
sleep	slip
heat	hit
seat	sit
sheep	ship
meal	mill
peal	pill
deep	dip
bead	bid

RESPONSES:-

GROUP 1

		Vowel produced	Instances
Informant 1			
English vowel	/i:/	i	7
		I	1
	/I/	I	2
		i	7
Informant 2			
	/ i:/	i:	6
		i	3
	/I/	I	6
		i	3
Informant 3	/i:/	i	8
	/I/	i	9
Informant 4	/ i:/	i	9
		i	8
	/ I/	I	1
Informant 5	/ i:/	i:	7
		i	2
	/I/	i:	2
		I	2
		I - e	5
Informant 6	/i:/	i:	2
		i	7
	/I/	I	3
		i	2
		i.	4
Informant 7	/i:/	i:	6
		i	1
	/I/	I	2
		I	4
		i:	1

GROUP 1 (Continued)

		Vowel produced	Instances
Informant 8	/i:/	i:	9
	/I/	I	1
		I	6
		i	2
Informant 9	/i:/	i:	8
		i	1
	/I/	I	3
		I:	1
		i:	4
		i	1
Informant 10	/i:/	i	9
	/I/	I	2
		I	1
			1
Informant 11	/i:/	i:	6
		i	3
	/I/	I	2
		i	6
		i:	1
Informant 12	/i:/	i:	8
		i	1
	/I/	I	2
		I	1
		i	3
		i:	3
Informant 13	/i:/	i:	8
		iu	1
	/I/	I	7
		i	1
			1

GROUP 1 (Continued)

		Vowel produced	Instances
Informant 14	/i:/	i:	7
		i	2
	/I/	I	3
		i	5
		:	1
Informant 15	/i:/	i	8
	/I/	I	7
		i	1
Informant 16	/i:/	i:	2
		i	7
	/I/	I	6
		i	2

GROUP 2

		Vowel produced	Instances
Informant 1	/i:/	i:	6
		i	2
	/I/	I	4
		i	2
		i:	3
Informant 2	/i:/	i:	2
		i	5
		i	1
		I	1
	/I/	i	6
		I	2
		I	1
Informant 3	/i:/	i:	7
		i	1
	/I/	I	1
		i	5
		i:	2

GROUP 2 (Continued)

			Vowel produced	Instances
Informant 4	/i:/		i:	9
	/I/		I	2
			I	1
			i:	4
Informant 5	/i:/	First time	i	6
		Second time	i:	4
			i.	2
	/I/		i	9
Informant 6	/i:/		i:	5
			i	4
	/I/		I	1
			i	7
			i:	1
Informant 7	/i:/		i:	6
			i	3
	/I/		i	6
			i:	3
Informant 8	/i:/		i:	6
			i	3
	/I/		i	4
			i:	2
				1
				1
			eɪ	1
Informant 9	/i:/		i	7
			I:	1
	/I/		I	3
			i	6
Informant 10	/i:/		i:	8
			i	1
	/I/		I:	1
				1
			i	5
			i:	2

GROUP 2 (Continued)

		Vowel produced	Instances
Informant 11	/i:/	i:	6
		i	3
	/I/	i	3
		I	6
Informant 12	/i:/	i:	8
		i	1
	/I/	I	1
		i.	6
		i	1
		i:	1
Informant 13	/i:/	i:	6
		i.	1
		I	1
	/I/	I	1
		i.	6
		i:	2
Informant 14	/i:/	i:	9
	/I/	i	9
Informant 15	/i:/	i:	7
		i	2
	/I/	I	1
		I	1
		i	6
		i:	1
Informant 16	/i:/	i:	8
		i	1
	/I/	I	2
		i	7

It has been stated that the aims of this exercise were firstly, to determine whether the informants could perceive the auditory difference between the various English vowels in the speech of a speaker of English as a first language and secondly, to determine whether they would be able to reproduce the difference. It seemed the only way to determine the informants' auditory perception of the vowel distinction in the recorded model's speech, in this exercise, was by their attempts to reproduce the distinction. The writer is aware that it is possible for an informant to hear the difference but at the same time be unable to reproduce it. For the purposes of this work, those informants who made an attempt to reproduce the difference, regardless of whether they produced sounds different from those of the recorded model will be taken as having perceived a distinction between the vowels. For instance, if the target sounds were English /i:/ and /I/, and the informant produced a variety of sounds such as [i:], [i], [i.], or [I] as a realization of them, then that informant would be taken as having heard the distinction and the various sounds produced, as his attempts to pronounce the difference he heard. However, if for the same target sounds, the informant produced either the English /i:/ or the Tonga /i/, for both sounds in all cases, then that informant would be taken either as having heard the distinction but unable to reproduce it, or as not having heard the distinction at all. Taking this as a criterion it is possible to say that on the whole, almost all the informants seem to have heard a distinction of some sort between the various pairs and triplets of vowel sounds. Whether the informants could pronounce the distinction between two or three vowel sounds, or indeed each individual vowel sound exactly as recorded by the English speaker, is another matter.

ENGLISH /i:/ and /I/ :-

When /i:/ is not realized as [i:] in the informants' pronunciation, it is very often realized as [i], which is the Tonga variety. The quality of both the Tonga and English [i] is similar, but the Tonga variety is shorter than the English. In a few cases English /i:/ is realized as [I]. When /I/ was not reproduced as [I], it was again realized as the Tonga /i/ and in some cases as a short variety of the Tonga [i.]. As in the case of /i:/, there are a few cases when /I/ is realized as [i:]. There is a tendency towards producing an open quality of English /I/. Sometimes the sound produced comes quite near to English /ɛ/, and in one case, even /æ/. This tendency is more common with informants in group 1 than those in group 2, although even in this group, it does occur to a lesser degree. For instance, there are 45 instances where English /I/ is realized as [I] or [ɛ] by informants in group 1, and only 17 such instances by those in group 2. Perhaps this is because more informants in group 1 than in group 2 made an effort to produce sounds as near to the quality of the target sound as they could. For instance, informants in group 1 have produced sounds varying from [ɪ] to [ɛ] in about 50% of the instances where the English sound /I/ occurs, whereas informants in group 2 managed to produce such sounds in only about 20% of the instances where [I] occurs. This means that in about 80% of the instances, informants in group 2 produced a sound similar to the Tonga [i] or its shorter version [i.] for the English vowel /I/, while group 1 did the same in only 50%. It is interesting however, to note that with the English [i:], the informants in group 2 produced a sound similar both in quality and quantity in about 72% of the instances, while group 1 did the same only in 46% of the instances, i.e., in 54% of the instances in which English /i:/ occurs, informants in group 1 produced the Tonga [i], while informants in group 2 produced

the same sound in 28%. This is interesting because it seems to indicate that, informants in group 1 tended to perceive the distinction between this particular pair of sounds in terms of quality, while informants in group 2, tended to do so in terms of quantity. We have indicated that English /i:/ is equivalent in quality to the Tonga /i/, but that the English variety is longer. The English /I/, on the other hand is different in quality from both English /i:/ and Tonga /i/. The informants in group 1 equated English /i:/ with Tonga /i/, most likely because of their similarity in quality, and consequently produced the Tonga variety in 54% of the instances in which English English /i:/ occurs. With /I/ however, informants in group 1 tried in 50% of the instances to produce sounds that approximated to it in terms of quality. Informants in group 2, on the other hand seem to have perceived the length of English /i:/ and made an effort to reproduce a long sound in 72% of the instances. English /I/, on the other hand, was perceived to be shorter in length, but the distinction in quality did not seem obvious, so a vowel sound [i], shorter in length than English /i:/ was produced in 80% instances.

In terms of the phonetic environment, /I/ tends to occur more often in the word slip and dip with informants in group 1 than in others. In the word slip alone, the vowel [I] or other varieties of a more open quality occur in 12 instances, and in 10 instances in the word dip for informants in group 1. For group 2, however, /I/ or similar vowel sound of an open quality tend to occur more often in the words slip and pill than in other words. The vowel occurs in 9 instances in the word slip, and in 8 instances in the word pill.

I have indicated that there was a tendency to produce an open variety of English I among the informants, and that although this feature is more common with

informants in group 1, it is also to be found to a lesser degree with informants in group 2. This feature seems to link with what has been discussed immediately above. Of the 45 instances where an open quality of English /ɪ/ or other vowels sounds of an even more open quality than [ɪ] or [ɪ̞], occur, 10 instances are in the word slip alone, and 7 in the word dip for informants in group 1. In group 2 on the other hand, of the 17 instances where vowel sounds of a more open quality than English /ɪ/ occur, 6 instances are in the word pill alone, and 5 in the word slip. It is difficult to see exactly why this is so, or indeed why the informants managed to produce the vowel [ɪ] in more instances in these words than in others. One could perhaps try to explain it by saying that since [d] and [p] in the words dip and pill are both plosive sounds, there might be something in the nature of plosives that makes conditions for the production of [ɪ] or vowels of a more open quality than itself, more favourable than in words with a different phonetic environment. However this does not explain why the word bid has the least instances of the occurrence of [ɪ], since the phonetic environment is similar to that in the words mentioned above. It is of course likely that, since any vowel which appears in a syllable closed by a voiced consonant is bound to be longer than that which appears in a syllable closed by a voiceless one, the difference in length between the vowel in the word dip and that in the word bid might have caused confusion in the minds of the informants between the English Long [i:] and long form of [ɪ]. We have already discovered that our informants readily confuse two vowel sounds on the basis of length - it is therefore, not inconceivable that the vowel sound in the word bid was taken for the English /i:/ or Tonga /i/ because of its length.

With English vowel /i:/, it was found that the vowel is realized as such in more instances in the words seat and sheep, 11 and 10 instances respectively with informants in group 1, and in the words, seat and bead with group 2 - 15 instances each.

The vowel in the word bead will be heard as long anyway, because of the phonological environment which we have just discussed above. It is therefore not surprising that bead has one of the highest counts of occurrences of long [i:]. As for the words seat and sheep, it is not quite clear why they should be among those with the highest incidence of the occurrence of [i:]. Since the vowel is occurring in syllables closed by fortis consonants in both words, one would have expected the Tonga /i/, which is the shorter of the two than the English /i:/.

One other point of observation is the word sleep. We noted that the word slip had the highest rate of the occurrence of [ɪ] or a vowel of an open quality for both groups as a whole; in this respect it is worth mentioning that the word sleep was more often produced with the Tonga vowel [i] than any other words. Perhaps this might have something to do with average permitted total syllable length, however one cannot be quite certain about this in the absence of auditory experiments to prove it.

ENGLISH /ɛ/ and /ɜ:/

/ɛ/	/ɜ:/
bed	bird
head	heard
ten	turn
Ben	burn
steady	sturdy
west	worst
debt	dirt

GROUP 1

RESPONSES:

	Vowel produced	Number of instances
Informant 1		
/ɛ/	e	6
	æ	1
/ɜ:/	ɜ:	6
	æ	1
Informant 2		
/ɛ/	ɛ	6
	ɛ:	1
		1
/ɜ:/	ɜ:	6
	ɛ	
Informant 3		
/ɛ/	e	7
		4
/ɜ:/	e	3
	ə	
Informant 4		6
/ɛ/	ɛ	1
	e	2
/ɜ:/	ɛ:	1
	ɛ	3
	ɔ	1
	ɒ	

GROUP 1 (Continued)

	Vowel produced	Number of instances
Informant 5		
/ɛ/	ɛ	6
	e	1
/ɜ:/	ɜ:	5
	ɛ	1
	ɔ	1
Informant 6		
/ɛ/	ɛ	6
	e	1
/ɜ:/	ɜ:	2
	ɛ	4
	ɒ	1
Informant 7		
/ɛ/	ɛ	7
/ɜ:/	ɜ:	2
	ɛ	4
	ɛ:	1
Informant 8		
/ɛ/	ɛ	7
/ɜ:/	ɜ:	7
Informant 9		
/ɛ/	ɛ	7
	ɜ:	2
/ɜ:/	ɛ:	3
	ɔ	2
Informant 10		
/ɛ/	ɛ	7
/ɜ:/	ɛ	4
	ɛ:	1
	ɒ	1
	u:	1
Informant 11		
/ɛ/	ɛ	7
/ɜ:/	ɛ:	6
	ɛ	1

GROUP 1 (Continued)

	Vowel produced	Number of instances
Informant 12		
/ɛ/	ɛ	7
	ɛ:	6
/ɜ:/	ɛ	1
Informant 13		
/ɛ/	ɛ	6
	eɪ	1
/ɜ:/		2
	ɛ:	3
	o:	1
	eo	1
Informant 14		
/ɛ/	ɛ	7
	ɛ	2
/ɜ:/	ɛ:	2
	ʌ:	1
	u	1
	o	1
Informant 15		
/ɛ/	e	3
	ɛ	4
/ɜ:/	ɛ	3
	ɛ:	1
	e	2
Informant 16		
/ɛ/	ɛ	7
/ɜ:/	ɜ:	3
	ɛ:	4

GROUP 2

Informant 1		
/ɛ/	ɛ	7
/ɜ:/	ɜ:r	7
Informant 2		
/ɛ/	ɛ	7
	ɛ:	5
/ɜ:/	ɛ	1
	ʌ	1

GROUP 2 (Continued)

	Vowel produced	Number of instances
Informant 3		
/ɛ/	ɛ	7
	ɛ:	
/ɜ:/	ɛ	3
	a	1
Informant 4		
/ɛ/	ɛ	5
	ɛ:	1
	e	1
/ɜ:/	ɜ:	1
	ɛ	4
	ɛ:	1
	əo	1
Informant 5		
/ɛ/	e	7
/ɜ:/	ɜ:	2
	e	5
Informant 6		
/ɛ/	ɛ	7
	ɛ:	5
/ɜ:/	ɛ	2
Informant 7		
/ɛ/	ɛ	7
	ɛ:	1
/ɜ:/	ɜ:	6
	ɛ	2
Informant 8		
/ɛ/	ɛ	3
	ai	1
	e	1
	ʌ	1
	æ	1
/ɜ:/	ɜ:	5
	ɑ:	1
	ʌ:	1

GROUP 2 (Continued)

	Vowel produced	Number of instances
Informant 9		
/ɛ/	ɛ	7
	a	1
/ɜ:/	ɜ:	4
	a:	1
	ɛ	1
	ɛ:	1
Informant 10		
/ɛ/	ɛ	7
/ɜ:/	ɜ:	4
	ɛ:	1
	ɛ	1
	ɔ:	1
Informant 11		
/ɛ/	ɛ	7
	ɜ:	2
/ɜ:/	ɜ:	4
	ɛ:	2
	ɛ	1
	ɔ:	1
Informant 12		
/ɛ/	ɛ	7
	ɜ:	2
/ɜ:/	ɛ:	5
	ɐ	1
Informant 13		
/ɛ/	ɛ	7
	ɜ:	5
/ɜ:/	ɛ	1
	ɒ	1
Informant 14		
/ɛ/	ɛ	7
	ɜ:	2
/ɜ:/	ɛ:	5
Informant 15		
/ɛ/	ɛ	7
	ɛ:	4
/ɜ:/	ɛ	2
	a	1

Group 2 (Continued)

	Vowel produced	Number of instances
Informant 16		
/ɛ/	ɛ	7
/ɜ:/	ɜ:	7

ENGLISH /ɛ/ and /ɜ:/

On the whole the English vowel /ɛ/ is realized as [ɛ] by most informants in both groups. For instances, in about 83% of its occurrences, it is produced as [ɛ] by informants in group 1. It is realized as [e], which is a closer variety in 16% of instances by the same informants, as [æe] or [ei] in 1%. The percentage of instances where it is realized as [ɛ] is even higher among informants in group 2 with 88%, 8% as [e] and 4% as [a] or [æe].

The informants' pronunciation of the English vowel /ɜ:/ present a different picture. It is realized as [ɜ:] by informants in group 1 in about 26% of instances, as [ɛ:] in 27%, [ɛ] in 26%: and as [ɒ], [ɔ] or [u] in 17% instances. In group 2, it was produced as English /ɜ:/ in 38%, as [ɛ:] in 34%. [ɛ] in 17% and as [ʌ], [ɒ] [ɔ] or [u] in 6%.

These figures raise a number of observations for [ɛ] and [ɜ:] as a pair of distinctive sounds. Firstly, it seems that the distinction in quantity between the two vowel sounds has been perceived by most informants, as is shown by the fact that informants in group 1 produced either a long [ɜ:] or [ɛ:] in 53% of the instances where English /ɜ:/ occurs, while informants in group 2 do the same in 72% of instances. On the other hand, there are only three instances where English /ɛ/ is realized as [ɛ:] or [ɜ:]. In terms of quality, it seems to be the English vowel [ɜ:] whose quality the informants in both groups find difficult to distinguish, as is shown by the fact that

informants in both groups are able to produce the vowel [ɛ] with its right quality, in 83% and 88% of its occurrence, respectively, whereas with English /ɜ:/ , in 57% and 56% of its occurrence it is not distinguished from /ɛ/ in quality. This is not at all surprising. We have indicated in the Chapter on 'Pronunciation Performance in English Vowels - that there are no central vowels in Tonga, so even if a Tonga speaker hears a distinction in quality between English /ɛ/ and /ɜ:/, it would take a great deal of practice to habituate him to raising the central part of his tongue for English /ɜ:/ . It is a position he has no need to use in his every day speech. The fact that informants in both groups made any attempt at all, to distinguish the two, in terms of quality in about 44% of the instances of English /ɜ:/ , is interesting from the point of view of the model.

On the whole, there is very little to be said about the phonological environment in which the sounds appear. Vowel /ɛ/ seems to be realized as [ɛ] at an average of 13, and 14 instances per word with informants in group 1 and 2 respectively out of a total of 112 occurrencies. Vowel /ɜ:/ tends to occur more often in the word bird than in other words, with a count of 7 instances in group 1, and 8 in group 2. Perhaps this is because the word bird itself happens to be a common one. If ever the informants' teachers did any work on minimal pairs with them, bed and bird, would be a likely pair to pick, since it represents items which most Zambian children are acquainted with. On the other hand the phonological environment itself might be relevant. The combination of plosive sounds on either side of the vowel could possibly be an influence, because the word with the second largest count of occurrences of the vowel sound [ɜ:] happens to be dirt, with 6 counts in group 1, and 7 in group 2. In this word, the vowel sound is in the same phonological environment i.e. plosive+vowel+plosive. On the other hand, the occurrence of the vowel in the environment plosive+vowel+nasal tends to be variable,

with 5 instances in the word turn for group 1, and 7 for group 2, while in the word burn, we have 3 instances in group 1 and 4 instances in group 2.

ENGLISH /ɛ/ and /eɪ/

/ɛ/	/eɪ/
led	laid
let	late
sell	sale
tell	tale
wet	wait
debt	date
pepper	paper

GROUP 1

	Vowel produced	Number of instances
Informant 1		
/ɛ/	ɛ	7
/eɪ/	eɪ	2
	ɛ	1
	ɛ:	3
	i	1
Informant 2		
/ɛ/	ɛ	6
	i	1
/eɪ/	eɪ	2
	ɛ:	4
	ɛ	1
Informant 3		
/ɛ/	ɛ	7
/eɪ/	eɪ	1
	ɛ:	4
	ɛ	2

GROUP 1 (Continued)

I		Vowel produced	Number of instances
Informant 4	/ɛ/	ɛ	3
		e	2
		a	2
	/eɪ/	eɪ	2
		ɛ:	2
		ɛ	3
Informant 5	/ɛ/	ɛ	5
		ɛ:	2
	/eɪ/	eɪ	2
		e	1
		ɛ:	2
		ɛ	2
Informant 6	/ɛ/	ɛ	7
	/eɪ/	eɪ	2
		ɛ:	1
			2
		i	2
Informant 7	/ɛ/	ɛ	7
	/eɪ/	ɛ:	3
		ɛ	3
		i	1
Informant 8	/ɛ/	ɛ	7
	/eɪ/	eɪ	3
		ɛ:	2
Informant 9	/ɛ/	ɛ	4
		ɛ:	1
		ɒ	1
		eu	1
	/eɪ/	eɪ	1
		ɛ:	2
		ɛ	2
		əʊ	1
		eu	1

GROUP 1 (Continued)

		Vowel produced	Number of ins:
Informant 10	/ɛ/	ɛ	7
	/eɪ/	ɛ:	4
		ɛ	3
Informant 11	/ɛ/	ɐ	7
	/eɪ/	eɪ	1
		ɛ	5
		i	1
Informant 12	/ɛ/	ɐ	6
		i	1
	/eɪ/	eɪ	2
		e	2
		i	1
		ɛ:	1
		ɛ	1
Informant 13	/ɛ/	ɛ	7
	/eɪ/	eɪ	2
		ɛ	3
		i:	2
Informant 14	/ɛ/	ɛ	4
		e:	3
	/eɪ/	eɪ	5
		ɛ:	2
Informant 15	/ɛ/	ɛ	7
	/eɪ/	ɛ	7
Informant 16	/ɛ/	ɛ	7
	/eɪ/	eɪ	1
		ɛ	5
		i:	1

GROUP 2

		Vowel produced	Number of instances
Informant 1	/ɛ/	ɛ	7
	/eɪ/	eɪ	5
		ɛ	1
		ɛɪ	1
Informant 2	/ɛ/	ɛ	7
	/eɪ/	eɪ	2
		ɛ:	3
		ɛ	1
		i	1
Informant 3	/ɛ/	ɛ	7
	/eɪ/	eɪ	1
		ɛ:	3
		ɛ	3
Informant 4	/ɛ/	ɛ	7
	/eɪ/	eɪ	5
		ɛ	2
Informant 5	/ɛ/	e	3
		i	1
		ɛ	4
		eɪ	1
	/eɪ/	eɪ	3
		ɛ:	2
		e:	1
		i:	1
		ɛ	1
Informant 6	/ɛ/	ɛ	6
		e	1
	/eɪ/	eɪ	2
		ɛ:	1
		ɛ	3
		e	1

GROUP 2 (Continued)

		Vowel produced	Number of instances
Informant 7	/ɛ/	ɛ	6
		ɛ:	1
	/eɪ/	eɪ	5
		ɛ	1
		ɛ:	1
Informant 8	/ɛ/	ɛ	4
		e	2
		i:	1
		æ	2
	/eɪ/	eɪ	3
		ɛ:	1
		e:	2
		i	1
Informant 9	/ɛ/	ɛ	7
	/eɪ/	eɪ	1
		ɛ:	2
		ɛ	4
Informant 10	/ɛ/	ɛ	4
		ɛ:	2
		a	1
	/eɪ/	eɪ	6
		ɛ:	1
Informant 11	/ɛ/	ɛ	7
		ɛ:	1
		eɪ	1
	/eɪ/	eɪ	6
		ɛ	1
		i	1
Informant 12	/ɛ/	ɛ	6
		ɛ:	3
	/eɪ/	eɪ	3
		ɛ:	1
		ɛ	3
		i	1

GROUP 2 (Continued)

		Vowel produced	Number of instances
Informant 13	/ɛ/	ɛ	5
		ɛ·	2
	/eɪ/	eɪ	1
		ɛ:	3
		ɛ	3
Informant 14	/ɛ/	ɛ	6
		ɛ:	1
	/eɪ/	eɪ	5
		ɛ:	1
		ɛ	1
Informant 15	/ɛ/	ɛ	7
	/eɪ/	eɪ	3
		ɛ	5
Informant 16	/ɛ/	ɛ	5
		ɛ:	2
	/eɪ/	eɪ	7

ENGLISH /ɛ/ and /eɪ/

English /ɛ/ is realized as [ɛ] in about 84% of instances by informants in group 1, and 85% of instances by informants in group 2. It is realized as [e] in 4% of instances by informants in group 1, and in 5% by informants in group 2; then as [ɛ:] in 3% and 11% of instances by groups 1 and 2 respectively. English /eɪ/ is realized as [ei] in only 23% of instances by informants in group 1, otherwise, it is produced variously as [ɛ:] in 27% of instances, [ɛ] in 36%, and [i], [e] or others in 14% by the same group. With informants in group 2, this diphthong was realized as such in 96% instances, but it was also produced as [ɛ] in 26%, [ɛ:] in 20% and as [i] or [e] in 8%.

With the informants in group 1, this means that 77% of the instances in which the English diphthong /eɪ/ occurs, it is heard as a pure vowel, [ɛ], [ɛ:], [e], [i] and others. On the whole, it seems to be the first element of the diphthong which is more obvious to the informant than the last, as is illustrated by the fact that [ɛ], [ɛ:] and [e], appear in 66% of the instances in which the diphthong is produced as a pure vowel. Only in 9% is it realized as [i], which is similar to the second element of the diphthong, and in 2% as other vowel sounds. Perhaps at times the second element of the diphthong is heard simply as a continuation of the first element, which might probably explain why the first element is sometimes realized as a long [ɛ:]

We have stated that informants in group 2 produced the diphthong [eɪ] in 96% of the instances in which it occurred, but that it was produced as [ɛ], [ɛ:], [e] and [i] in 54% instances; showing that informants in this group were no more certain of this sound than those in group 1. What happened in group 2 was that, since informants were supposed to repeat each word twice, they tended to pronounce the vowel sound in two different ways. For instance, one informant may pronounce the sound as [ɛ] or [ɛ:] during the first round but as [e] or [eɪ] during the second. The reason for this change may well be that the informants thought they heard the sound as an [ɛ] or [ɛ:] in one instance and as something else in the second.

On the other hand, they may have produced the [ɛ] or [e] sound in one instance out of habit, because these are the sounds they normally use instead of the [eɪ] sound in spontaneous speech, and they may then have corrected themselves in another instance and produced [eɪ].

The vowel [ɛ] was produced as such in more instances in the following words than any other:-

	GP1	GP2
wet	16	15
debt	16	16
pepper	16	16

The diphthong /eɪ/ was produced as such in more instances in the following words than any other:-

	GP1	GP2
wait	3	10
date	10	12
paper	8	11

The diphthong /eɪ/ was realized as [e] or [i], only in the following words:-

	Group1	Group 2
late	13	8

English /ɜ:/ and /eɪ/

/ɜ:/	/eɪ/
work	wake
firm	fame
hurt	hate
purse	pace
purge	page
serve	save

GROUP 1

		Vowel produced	Number of instances
Informant 1	/ɜ:/	ɜ:	3
		ɛ	3
	/eɪ/	eɪ	3
		ɜ:	2
		e	2
		i	1
Informant 2	/ɜ:/	ɜ:	1
			4
		i	1
	/eɪ/	eɪ	3
		ɛ	3
Informant 3	/ɜ:/	ɛ	4
		ɛ:	1
		D	1
	/eɪ/	ɛ	6
Informant 4	/ɜ:/	ɔ:	3
		ɑ:	1
		ʌ	1
		a	1
	/eɪ/	eɪ	4
		ɛ	1
		ɛ:	1
Informant 5	/ɜ:/	ɜ:	4
		ɛ	1
	/eɪ/	ɛ	5
		ɛ:	1
Informant 6	/ɜ:/	ɛ	2
		ɑ:	2
		eɪ	1
		D	1
	/eɪ/	eɪ	3
		ɛ	3

GROUP 1 (Continued)

		Vowel produced	Number of instances
Informant 7	/ɜ:/	ɛ	5
		D	1
	/eɪ/	eɪ	1
		ɛ:	1
		ɛ	2
		a	1
		i	1
Informant 8	/ɜ:/	ɜ:	3
		D	2
		ɑ:	1
	/eɪ/	eɪ	1
		ɛ	3
		ɛ:	1
		ɜ:	1
Informant 9	/ɜ:/	ɛ	2
		ɛ:	1
		a	1
		ɒ:	1
		o	1
	/eɪ/	ɛ	1
		ɛ:	4
		i	1
Informant 10	/ɜ:/	ɜr	1
		ɛ	2
		a	2
		ɔ	1
	/eɪ/	eɪ	4
		ɛ	2
Informant 11	/ɜ:/	ɛ	3
		o	3
	/eɪ/	eɪ	1
		ɛ	4
		ɛ:	1

GROUP 1 (Continued)

		Vowel produced	Number of instances
Informant 12	/ɜ:/	ɜ:	3
		ɑ:	1
		o	2
	/eɪ/	eɪ	5
			1
Informant 13	/ɜ:/	ɛ:	1
		ɛ	1
		eɪ	1
		D	2
		o	2
	/eɪ/	ɛ	1
		eɪ	4
		i	1
Informant 14	/ɜ:/	ɛ:	1
			2
		ɛ	2
		ɔ	
		o	1
	/eɪ/	eɪ	5
		ɛ	1
Informant 15	/ɜ:/	ɛ:	1
		ɛ	3
		e	1
		o	1
	/eɪ/	ɛ:	1
		ɛ	4
		e	1
Informant 16	/ɜ:/	ɜ:	4
		ʌ	1
		ɛ	1
	/eɪ/	ɛ	4
		ɜ:	1
		i:	1

GROUP 2

		Vowel produced	Number of instances
Informant 1	/ɜ:/	ɛ	3
		ɜ:r	2
		u:r	1
	/eɪ/	eɪ	2
		ɛ	2
		ɜr	2
Informant 2	/ɜ:/	ɜ:	1
		ɛ:	1
		ɛ	2
		ʌ	2
	/eɪ/	ɛ	4
		ɛ:	1
		ɜ:	1
Informant 3	/ɜ:/	ɛ	4
		a	2
	/eɪ/	ɛ	6
Informant 4	/ɜ:/	ɛ	3
		a	3
	/eɪ/	eɪ	2
			3
		ɜ:	1
Informant 5	/ɜ:/	ɜ:	1
		ɛ	3
		eɪ	1
		ɔ	1
	/eɪ/	eɪ	6
Informant 6	/ɜ:/	ɜ:	1
		ɛ	2
		æ	1
		a	1
		eɪ	1
		ɛ	
	/eɪ/	eɪ	3
			3

GROUP 2 (Continued)

		Vowel produced	Number of instances
Informant 7	/ɜ:/	ɜ:	1
		ɛ:	1
		ɑ:	2
		a	2
	/eɪ/	eɪ	4
		ɛ:	1
		ɛ	1
Informant 8	/ɜ:/	ɜ:	5
		a	1
	/eɪ/	eɪ	6
Informant 9	/ɜ:/	ɛ	2
		æ	1
		a	1
		ɒu	1
			1
	/eɪ/	eɪ	5
		ɛ	1
Informant 10	/ɜ:/	ɜ:	2
		a	2
		ɛ	1
		ʌ	1
	/eɪ/	eɪ	3
		ɛ	3
Informant 11	/ɜ:/	ɜ:	2
		ɛ:	1
		ɛ	1
		ɔ	1
		ɑu	1
		a	1
	/eɪ/	eɪ	4
		ɛ	1
		ɜ:	1

GROUP 2 (Continued)

		Vowel produced	Number of instances
Informant 12	/ɜ:/	ɛ	5
		ɑi	1
		ɛ:	1
	/eɪ/	ɛ	5
		ɛ:	1
Informant 13	/ɜ:/	ɜ:	2
		ɛ:	1
		ɛ	1
		ɔ	1
		ɑr	1
	/eɪ/	ɛ:	2
		ɛ	4
Informant 14	/ɜ:/	ɜ:	4
		ɛ:	1
	/eɪ/	eɪ	2
		ɛ:	3
		i:	1
Informant 15	/ɜ:/	ɛ:	2
		ɛ	2
		a	3
	/eɪ/	eɪ	3
		ɛ	1
		ɛ:	2
Informant 16	/ɜ:/	ɜ:	5
		ɑu	1
	/eɪ/	eɪ	5
		ɛ	1

ENGLISH /3:/ and /ei/

English /3:/ is realized as [3:] by informants in group 1 in 20% instances, as [ɛ:] in 5%, [ɛ] in 38%, and as [a], [ɑ:], [ɒ], [ɔ] [o] in 35% of instances. The same English vowel /3:/ is produced as [3:] in 30%, as [ɛ:] in 13%, [ɛ] in 34% and as [a], [ɑ:], [ɒ] [ɔ], [o] in 31% of instances by informants in group 2.

English diphthong /eɪ/ is produced as [eɪ] in 35% instances by informants in group 1, and as [ɛ] in 46%. [ɛ:] in 6% and [e] and [i] in 7% by the same informants. With informants in group 2, this diphthong is produced as [eɪ] in 63% instances, as [ɛ] in 38%, [ɛ:] in 11%, and [e] and [i] in 2%.

These figures show that, with informants in group 1, both English /3:/ and /eɪ/ are produced as [ɛ] [ɛ:] [e] in about 69% of cases and in about 65% of cases by informants in group 2. The reason for this might be that the informants felt they heard [ɛ] or [ɛ:] instead of [3:] or [eɪ], or they may very well have heard [3:] or [eɪ], but produced [ɛ] or [eɪ] out of habit, [ɛ], being the usual sound substituted for English /3:/ and /eɪ/ in the informants' spontaneous speech.

Informants in group 2 show that they can perceive a distinction between the diphthong [eɪ] and the vowel [ɛ], which normally replaces [eɪ] in the pronunciation of informants in group 1. However, even in this group, there is still an element of uncertainty about the sound which results in the informants' pronouncing it in two different ways. For instance /eɪ/ is produced as [eɪ] in 63% instances, but as [ɛ,] [ɛ:] [e,] [i] in 51%.

The vowel [3:] occurs more often in the following words than any other:-

Group 1	Group 2
hurt - 5	serve 5
purge - 4	purge - 6

The diphthong [eɪ] occurs more often in the following words than any other:-

Group 1	Group 2
ſame - 7	ſame - 10
save - 7	hate - 8

ENGLISH/ɛ/, /3:/ and /eɪ/

/ɛ/	/3:/	/eɪ/
hell	hurl	hail
west	worst	waste
edge	urge	age
felled	furled	failed
sten	stern	stain
debt	dirt	date

Group 1

		Vowel produced	Number of instances
Informant 1	/ɛ/	ɛ	3
		3:	2
		ɪ	1
	/3:/	3:	5
		ɛ:	1
	/eɪ/	eɪ	4
		e	1
		i	1

Group 1 (Continued)

		Vowel produced	Number of instances
Informant 2	/ɛ/	ɛ	1
		e	5
	/ɜ:/	e:	5
		e	1
		ɔ	1
	/eɪ/	eɪ	2
		e:	3
		e	1
Informant 3	/ɛ/	ɛ	4
		e	2
	/ɜ:/	ɛ:	1
		ɛ	3
		ɒ	1
		əu	1
	/eɪ/	ɛ	5
		e	1
Informant 4	/ɛ/	ɛ	4
		ɛ:	1
		e	1
	/ɜ:/	ɛ:	4
		ɛ	1
		ɔ:	1
	/eɪ/	eɪ	2
		ɛ:	1
			2
		i	1
Informant 5	/ɛ/		5
		e	1
	/ɜ:/	ɜ:	3
		ɛ:	1
		ɛ	2
	/eɪ/	eɪ	3
		ɛ	1
		ɛ:	2

Group 1 (Continued)

		Vowel produced	Number of instances
Informant 6	/ɛ/	ɛ	5
		e	1
	/ɜ:/	ɛ:	2
		ɛ	1
		ɒ	1
		ɔ:	1
		e	1
	/eɪ/	eɪ	2
		ɛ	2
		e	1
		i	1
Informant 7	/ɛ/	ɛ	6
	/ɜ:/	ɜ:	3
		ɛ	1
		ɒ	1
		O:	1
	/eɪ/	eɪ	2
		ɛ	2
		i	2
Informant 8	/ɛ/	ɛ	5
		e	1
	/ɜ:/	ɜ:	4
		ɛ	1
		ɔ	1
	/eɪ/	eɪ	2
		ɛ	3
		i	1
Informant 9	/ɛ/		4
		e	1
		u	1
	/ɜ:/	ɜ:	2
		ɛ	1
		ɒ	2
		ɑu	1

Group 1 (Continued)

		Vowel produced	Number of instances
Informant 9 (Cont'd.)	/eɪ/	eɪ	2
		ɛ:	2
		eu	1
		i	1
Informant 10	/ɛ/	ɛ	6
	/ɜ:/	ɛ:	3
		ɛ	1
		e	1
		o:	1
	/eɪ/	eɪ	3
		ɛ:	1
		ɛ	1
		i	1
Informant 11	/ɛ/	ɛ	4
		eɪ	1
		u	1
	/ɜ:/	ɛ:	2
		ɛ	2
		ɔ	1
		u	1
	/eɪ/	eɪ	1
		ɜ:	1
		ɛ:	1
		ɛ	3
Informant 12	/ɛ/	ɛ	5
		e	1
	/ɜ:/	ɜ:	4
		ɔ	1
		ou	1
	/eɪ/	eɪ	3
		ɛ	2
		ɜ:	1

Group 1 (Continued)

		Vowel produced	Number of instances
Informant 13	/ɛ/	ɛ	6
	/ɜ:/	ɜ:	3
		o	3
	/eɪ/	eɪ	3
		ɛ	3
Informant 14	/ɛ/	ɛ	6
	/ɜ:/	ɛ:	3
		o:	1
		o	1
		ɔu	1
	/eɪ/	eɪ	2
		ɛ:	1
		ɛ	3
Informant 15	/ɛ/	ɛ	4
		e	1
	/ɜ:/	ɛ:	3
		ɛ	2
	/eɪ/	ɛ	4
		ɛ:	1
Informant 16	/ɛ/	ɛ	5
		ɑu	1
	/ɜ:/	ɜ:	1
		ɛ:	3
		ɛ	1
		eɪ	1
	/eɪ/	eɪ	3
		ɛ:	1
		ɜ:	1
		ɛ	1

Group 2

		Vowel produced	Number of instances
Informant 1	/ɛ/	ɛ	5
		e	1
	/ɜ:/	ɜ:r	5
		ɑ u	1
	/eɪ/	eɪ	4
		ɛ	1
			1
		ɛ:	1
Informant 2	/ɛ/	ɛ	5
		ʌ	1
	/ɜ:/	ɛ:	3
		ɜ	1
		o	1
		D	1
	/eɪ/	eɪ	1
		ɛ:	2
		ɜ	2
		D	1
Informant 3	/ɛ/	ɜ	6
	/ɜ:/	ɛ:	2
		ɛ	2
		o:	1
		a:	1
	/eɪ/	ɛ	4
		ɛ:	2
Informant 4	/ɛ/	ɛ	5
		ɛ:	1
	/ɜ:/	ɜ:	1
		ɐ:	2
		ɛ	2
		ɔ:	1
	/eɪ/	ɛ:	3
		ɛ	3

GROUP 2

		Vowel produced	Number of instances
Informant 5	/ɛ/	ɛ	4
		eɪ	2
	/ɜ:/	ɜ:	1
		ɔ	1
		eɪ	3
		o	1
	/eɪ/	eɪ	5
		ɛ	1
Informant 6	/ɛ/	ɛ	6
	/ɜ:/	ɜ:	2
		ɛ:	1
		ɛ	1
		eɪ	1
		au	1
	/eɪ/	ɛ:	3
		ɛ	2
		e	1
Informant 7	/ɛ/	ɛ	5
		au	1
	/ɜ:/	ɜ:	1
		ɛ:	2
		eɪ	1
		D	1
		ɔ:	1
	/eɪ/	eɪ	3
		ɛ:	1
		ɛ	1
Informant 8	/ɛ/	ɛ	4
		eɪ	1
		e:	1
	/ɜ:/	ɜ:	4
		e:	1
		ɑ	1

Group 2 (Continued)

		Vowel produced	Number of instances
Informant 8 (Cont'd.)	/eɪ/	ɛ	3
		eɪ	3
Informant 9	/ɛ/	ɛ	4
		ɑ:	1
		eɪ	1
	/ɜ:/	ɜ:	2
		o:	1
		o	2
		ɔ:	1
	/eɪ/	eɪ	5
		ɛ	1
Informant 10	/ɛ/	ɛ	3
		ɔ:	1
		eɪ	1
	/ɜ:/	ɜ:	4
		ɔ:	2
	/eɪ/	eɪ	3
		ɛ	1
		eu	1
		i:	1
Informant 11	/ɛ/	ɛ	5
		e	1
	/ɜ:/	ɜ:	3
		ɛ:	2
		ɛ	1
		ɔu	1
	/eɪ/	eɪ	3
		ɛ	2
		ɛ:	1

Group 2 (Continued)

		Vowel produced	Number of instances
Informant 12	/ɛ/	ɛ	6
	/3:/	3:	2
		ɛ:	2
		ɛɹ	1
		ɔɛ	1
	/eɪ/	eɪ	2
		ɛ:	2
		3:	1
		ɛ	1
Informant 13	/ɛ/	ɛ	6
	/3:/	3:	3
		ɛ	1
		D	1
		ɔ:	1
	/eɪ/	ɛ:	4
		ɛ	1
		e	1
Informant 14	/ɛ/	ɛ	6
	/3:/	3:	1
		ɛ	1
		ɛ:	3
		ɔ:	1
	/eɪ/	eɪ	3
		ɛ	3
Informant 15	/ɛ/	ɛ	6
	/3:/	3:	1
		ɛ	3
		ɛ:	2
	/eɪ/	eɪ	2
		ɛ	3
		e	1

Group 2 (Continued)

		Vowel produced	Number of instances
Informant 16	/ɛ/	ɛ	5
		ɜ:	1
	/ɜ:/	ɜ:	5
		ɔ	1
	/eɪ/	eɪ	4
		ɜ:	2

ENGLISH /ɛ/, /ɜ:/ and /eɪ/ :-

/ɛ/ is produced as [ɛ] in 76% instances and as [e] in 15% by informants in group 1. The same sound is produced as [ɛ] in about 99% and as [e] in 9% of instances by informants in group 2.

/ɜ:/ is produced as [ɜ:] in 24% of cases, as [ɛ:] in 24%, [ɛ], in 16% [e] in 16% and as [o] [ɒ] [ɔ:] in 8% by informants in group 1. With informants in group 2, the realization is [ɜ:] in 38% of instances, as [ɛ:] in 29%, [ɛ] in 13% and as [o] [ɒ], [ɑ:] in 9%.

/eɪ/ is realized as [eɪ] in 35% instances, as [ɛ:] in 10%, [ɛ] in 33%, [e] in 4%, and as others in 18% of instances. It is realized as [eɪ] in 46% of cases by informants in group 2, as [ɛ:] in 22%, [ɛ] in 32% and [e] in 4%.

The percentage of instances where /ɜ:/ and /eɪ/ are produced as [ɛ], [ɛ :] or [e] is still very high in both groups. In about 56% of instances where /ɜ:/ and /eɪ/ occur, they are realized as: [ɛ], [ɛ :] or [e] by informants in group and in 49% of the instances by informants in Group 2. The distinction in length between /ɛ/ and /ɜ:/ has generally been perceived by both groups wherever the two sounds appear in contrast with each other.

Generally speaking informants in Group 2 seem to have produced the three sounds [ɛ], [ɜ:] and [ɛi], in more instances than informants in group 1.

English /ɛ/ occurs more often in the following words than any other:-

Group 1	Group 2
west -12	west - 16
debt - 12	debt - 14
edge -11	edge -14

All these words have a feature in common and that is the presence of a plosive or affricative consonant in final position. One can not be certain whether this feature is responsible for the high occurrence of English /ɛ/ in these words.

English /ɜ:/ occurs more often in the following words than any other:

Group 1	Group 2
dirt -6	urge ; -9
urge - 4	stern -8
stern -4	dirt - 8

English /eɪ/ occurs more often in the following words than any other:-

Group 1	Group 2
hail - 6	hail - 9
stain - 8	stain - 8

ENGLISH /æ/ and /ɑ:/

/æ/	/ɑ:/
cat	cart
pack	park
hat	heart

ban	barn
match	march
had	hard
lad	lard
ham	harm

GROUP 1

	Vowel produced	Number of instances
Informant 1		
/æ/	ɛ	8
/ɑ:/	ɑ:	7
	ʌ	3
Informant 2		
/æ/	e	8
/ɑ:/	ɑ:	1
	ɒ	7
Informant 3		
/æ/	ɛ	5
	a	3
/ɑ:/	ɒ	4
	ɛ	1
	a:	1
	a	1
	o	1
Informant 4		
/æ/	ɛ	6
	ɑ:	1
	ɑi	1
/ɑ:/	ɑ:	8
	ɑi	1

GROUP 1 (Continued)

Informant 5	Vowel produced	Number of instances
/æ/	ɛ	8
/ɑ:/	ɑ:	7
	ɒ	1
Informant 6		
/æ/	ɛ	6
	ɑ:	1
/ɑ:/	a	3
	a:	1
	ɜ:	1
	O	1
	O:	1
Informant 7		
/æ/	ɛ	8
/ɑ:/	ɑ:	3
	ɒ	2
	ɛ	1
	ɑu	1
	a:	1
Informant 8		
/æ/	ɛ	6
	ɛ:	2
/ɑ:/	ɒ:	5
	ɒ	2
	ɛ	1
Informant 9		
/æ/	ɛ	6
	a	2
	ʌ	1
/ɑ:/	ɒ	6
	a	2
Informant 10		
/æ/	æ	1
	ɛ	4
	e	3
/ɑ:/	O	7
	æ	1

GROUP 1 (Continued)

Informant 11	Vowel produced	Number of instances
/æ/	æ	1.
	ɛ	4
	a	3
/ɑ:/	o	3
	o:	3
	ɒ	1
	ɑu	1
Informant 12		
/æ/	ɛ	7
	ʌ	1
/ɑ:/	ɑ:	5
	ɒ:	2
	ou	1
Informant 13		
/æ/	ɛ	7
	a	1
/ɑ:/	o	5
	o:	3
Informant 14		
/æ/	ɛ	8
/ɑ:/	ɑ:	4
	ɒ	2
	o	2
Informant 15		
/æ/	ɑ:	1
	ɛ	6
	ɛ;	1
/ɑ:/	ɒ:	3
	o	3
Informant 16		
/æ/	ɛ	8
/ɑ:/	ɑ:	1
	ɒ:	7

GROUP 2

Informant 1	Vowel produced	Number of instances
/æ/	ɛ	2
	a	1
	ɑ	2
	ɑ:	1
		2
/ɑ:/	ɑ:	3
	ɐ	5
Informant 2		
/æ/	ɛ	3
	a	4
	ɑ:	1
/ɑ:/	ɑ:	1
	D:	2
	D	1
	ɔ:	2
	a:	2
Informant 3		
/æ/	a	8
/ɑ:/	ɔ:	1
	ɔ	3
	a	2
	a:	2
Informant 4		
/æ/	a	6
	ɛ	2
/ɑ:/	ɑ:	2
	o	5
	a:	1
Informant 5		
/æ/	ɑ:	6
	a:	1
	ɑ:	1
	ɛ	1
/ɑ:/	D:	1
	ɒ	7

GROUP 2 (Continued)

Informant 6	Vowel produced	Number of instances
/æ/	a	6
	ɛ	2
/ɑ:/	a:	1
	a	1
	ɔ:	2
	o:	2
	u	3
Informant 7		
/æ/	a	8
/ɑ:/	ɑ:	1
	a:	3
	D	2
	o :	2
Informant 8		
/æ/	ɐ	1
	a	4
	ɛ	3
/ɑ:/	ɑ:	3
	D	1
	ɔ	1
	a	3
Informant 9		
/æ/	ɛ	8
/ɑ:/	ɑ:	1
	D	1
	ɔ:	6
Informant 10		
/æ/	ɛ	3
	a	4
	i	1
	ei	1
/ɑ:/	D:	2
	ɔ:	6

GROUP 2 (Continued)

Informant 11	Vowel produced	Number of instances
/æ/	æ	1
	a:	1
	a	1
	ɛ	6
/a:/	ɑ:	4
	D:	3
	ɔ:	1
	a	2
Informant 12		
/æ/	ɛ	5
	ɛ:	2
	a	1
/a:/	a:	2
	a:	6
Informant 13		
/æ/	a	3
	ɛ	4
	ə	1
/a:/	D:	5
	Du	1
	ɑu	2
Informant 14		
/æ/	æ	1
	a	3
	a:	1
	ɛ	2
	3:	1
/a:/	æ	3
	a:	4
	ɐ:	2
Informant 15		
/æ/	ɛ	2
	a	6
/a:/	ɑ:	2
	D:	1
	a:	4
	o	1
	ɑu	1
Informant 16		
/æ/	æ	3
	ɛ	2
	a	4
	ɑ:	1
	ɑ:	1

GROUP 2 (Continued)

Informant 16 (Cont'd.) /ɑ:/	Vowel produced	Number of instances
	ɑ:	3
	ɑu	1
	D:	1
	ɔ:	4
	ɑu	1

ENGLISH /æ/ AND /ɑ:/

English /æ/ is produced as [æ] by informants in group 1 in 2% of instances, otherwise it is produced by the same informants as [ɛ] or [ɛ :] in 79% instances, as [e] in 6%, [a] in 7% and [ɑ:] , in 2%. Informants in group 2 produce [æ] in 5%, [a] in 56% [ɛ] in 43% and [ɑ:] in 5%.

We have already indicated in the previous section on English vowels in relation to Tonga vowels, that Tonga has two vowel sounds between the half-close and open area. English /æ/ is somewhere between the half-open and open area. Since the half open area is blank in Tonga, it means the nearest Tonga sound to English /æ/ , is the open /a/. It seems difficult for someone accustomed to the half-close, open area to make the necessary adjustment to produce [æ]. This is illustrated by the fact that of all the English vowel sounds we have dealt with so far in this chapter, [æ] has the lowest percentage of occurrences for both groups. It is however significant that, whereas almost all the informants in both groups, pronounced [æ] as [a] in their reading in the previous section, informants in group 1 pronounce it as [ɛ] in 79% instances in this exercise. Informants in group 2, pronounce it as [a] in 56%, and as [ɛ] in 43%. In the first place, the informants who pronounce [æ] as [ɛ] have made a little adjustment by moving from their close type of [e] to the more open English variety. Secondly, the fact that the informants' pronunciation of this sound keeps fluctuating between [ɛ] and [a] may

indicate the informants' awareness of the presence of some qualities of both [ɛ] and [a] in [æ], and his attempts to strike a balance between the two sounds.

English /ɑ:/ is realized as [a:] in 30% of instances by informants in group 1, and as [ɒ] in 20% as [o] [o:] [ɑu] [oʊ] in 25%, as [a] or [a:] in 7% and others in 18% by the same informant.

Informants in group 2 produce [ɑ:] in 23% instances, as [ɒ] [ɔ:], [o], [ɒu], [ɑu] in 52%, as [a] or [a:] in 29%.

These figures are again significant in the sense that in the last section informants in both groups pronounced /ɑ:/ as [a] in all occasions. No informant showed any awareness of the back quality of /ɑ:/. In this particular exercise however, we find that in 75% of the instances where /ɑ:/ occurs, it is produced as a sound with a back quality of some kind ranging from [ɑ:] to [o].

As a pair of distinctive sounds, we find that /æ/ and /ɑ:/ have been kept separate in the majority of cases. In the previous exercise both /æ/ and /ɑ:/ had been pronounced as [a], in this exercise, /æ/ is realized as [a] in 7% of cases by group 1 and 56% cases by group 2. /ɑ:/ is realized as [a] in 7% by group 1 and 29% by group 2. There is not as much overlapping in the pronunciation of these two sounds as there was in the last section.

In group 1, /æ/ is mostly realized as [ɛ], but it is realized as [a] in 7% of cases, and it occurs more often in the following words:-

Group 1

match - 3

ham - 3

In group 2 the vowel /æ/ occurs as [ɛ] more frequently in the following words than any other:-

had - 10

cat - 9

hat - 8

Vowel /ɑ:/ occurs more often in the following words than any other:-

Group 1	Group 2
cart - 6	hard - 5
hard - 5	
harm - 5	

ENGLISH /æ/ AND /ʌ/

/æ/	/ʌ/
cat	cut
hat	hut
ban	bun
bank	bunk
lack	luck
cap	cup
drank	drunk

GROUP 1

Informant 1 /æ/	Vowel produced	Number of instances
	ɛ	5
	æ	2
	ʌ	1
/ʌ/	ʌ	7

GROUP 1 (Continued)

Informant 2	Vowel produced	Number of instances
/æ/	e	5
	a	1
	i	1
/ʌ/	a	3
	D	3
	e	1
Informant 3		
/æ/	ɛ	5
	a	1
	ʌ	1
/ʌ/	a	6
	ɛ	1
Informant 4		
/æ/	ɛ	4
	ɑ:	2
	a	1
/ʌ/	a	4
	ɑ:	3
Informant 5		
/æ/	ɛ	5
	ɑ:	1
	a	1
/ʌ/	3	3
	a	2
	ɑ:	1
	ɑu	1
Informant 6		
/æ/	ɛ	7
/ʌ/	ʌ	7
Informant 7		
/æ/	ɛ	4
	D	1
	ɑ:	1
	ʌ	1
/ʌ/	ʌ	7

GROUP 1 (Continued)

Informant 8	Vowel produced	Number of instances
/æ/	ɛ	5
	a	1
	ʌ	1
/ʌ/	ʌ	5
	D	1
	I	1
Informant 9		
/æ/	ɛ	4
	ʌ	4
/ʌ/	ʌ	7
Informant 10		
/æ/	æ	1
	ʌ	3
	ɛ	3
/ʌ/	ʌ	5
	D	2
Informant 11		
/æ/	ɛ	4
	ʌ	2
	u	1
/ʌ/	ʌ	3
	D	1
	o	1
	u	1
Informant 12		
/æ/	ɛ	5
	ʌ	2
/ʌ/	ʌ	5
	ɑ:	2
Informant 13		
/æ/	ɛ	5
	ɑ:	1
	ʌ	1
/ʌ/	ʌ	1
	ɑ:	6
Informant 14		
/æ/	ɛ	7

GROUP 1 (Continued)

Informant 14 (Cont'd.)	Vowel produced	Number of insta
/ʌ/	ʌ	4
	ɑ:	1
	D	1
	æ	1
Informant 15		
/æ/	ɛ	6
	ɑ:	1
/ʌ/	ʌ	2
	D	5
Informant 16		
/æ/	ɛ	6
	ʌ	1
/ʌ/	ʌ	4
	ɑ:	2
	ɛ	1

GROUP 2

Informant 1		
/æ/	a	2
	ɛ	5
/ʌ/	ʌ	7
Informant 2		
/æ/	ɛ	5
	a	1
	ʌ	1
/ʌ/	ʌ	6
	D	1
Informant 3		
/æ/	ɛ	3
	a:	2
	ʌ	2
/ʌ/	ʌ	5
	ʌ:	1
Informant 4		
/æ/	ɛ	2
	a	4
	ʌ	

GROUP 2 (Continued)

Informant 4 (Cont'd.)	Vowel produced	Number of instances
/ʌ/	ʌ	2
	D	2
	ɔ	1
	a	2
Informant 5		
/æ/	æ	1
	ɛ	4
	a	2
/ʌ/	ʌ	2
	a	1
	D	3
	ɛ	1
Informant 6		
/æ/	a	1
	ɛ	6
/ʌ/	a	7
Informant 7		
/æ/	a	7
/ʌ/	a	7
Informant 8		
/æ/	æ	4
	ɛ	3
	ʌ	1
/ʌ/	ʌ	7
Informant 9		
/æ/	ɛ	7
/ʌ/	ʌ	6
	D	1
Informant 10		
/æ/	ɛ	4
	a	3
/ʌ/	ʌ	5
	ə	1
	ɔ	1
	a	1

GROUP 2 (Continued)

Informant 11	Vowel produced	Number of instances
/æ/	ɛ	7
	a	2
/ʌ/	a	7
	ɒ	1
Informant 12		
/æ/	ɛ	6
	ɛ:	1
/ʌ/	a	6
	ɑ	1
Informant 13		
/æ/	ɛ	2
	ɛ:	2
	a	2
	3:	1
/ʌ/	a	2
	ɛ	1
	ɒ	2
	ɒu	1
	ə	1
Informant 14		
/æ/	æ	2
	ɛ	3
	a	2
	ɒ	1
/ʌ/	æ	2
	a	5
Informant 15		
/æ/	a	4
	ɛ	4
	3:	1
/ʌ/	ʌ	2
	a	4
	o	1
Informant 16		
/æ/	æ	2
	ɛ	5
	a	1
/ʌ/	a	6
	ɑ:	1

ENGLISH /æ/ and /ʌ/

Vowel /æ/ is realized as [æ] in 3% instances, and as [ɛ] 67%, as [ʌ] in 15%, as [a] in 5% and [ɑ:] or [ɑ] in 4% instances, by informants in group 1. Informants in group 2 produced /æ/ as [æ] in 8%, as [ɛ] in 61%, as [a] in 29% and [ʌ] in 4%.

Vowel /ʌ/ is realized as [ʌ] by informants in group 1 in 50% cases, [ɑ:], [o], [ɔ], [ɔ] or [ɜ:] in 28% and as [æ] in 7%. The same vowel is realized as [ʌ] in 39% instances, as [a] in 43% and as [ɒ], [ɔ], or [ɑ:] in 13% by informants in group 2.

According to these figures informants in group 1 seem to have increased their production of the vowel /æ/ by 1%. [æ] was produced in 2% of instances by informants in group 1 when it appeared as a minimal pair with /ɑ:/ as opposed to 3% when it appears as a pair with /ʌ/. Informants in group 2 increased their production of the same sound by 3%, i.e. 5% when /æ/ appeared with /ɑ:/ as opposed to 8% when it appears with /ʌ/. This might indicate that with continued practice the informants' performance in the production of this sound might improve. One significant point to be noted in these figures is the swing by group 2 producing [a] for /æ/, to [ɛ]. When /æ/ appeared as a minimal pair with /ɑ:/, we noticed that /æ/ is pronounced as [a] in 56%, and as [ɛ] in 43% instances by informants in group 2. In this set however, the same informants produce [ɛ] for /æ/ in 61% instances. This shift clearly shows the informants' perception of a distinction in terms of quality between the two vowels. When /æ/ is in a pair with /ɑ:/ we find a high percentage of the occurrence of [a] but at the same time we find that, the back quality of /ɑ:/ is used as a distinguishing factor between the two sounds, as is illustrated by the fact that in 75%

instances of /ɑ: /, it is produced as a sound with a back quality. In the particular case we are dealing with, i.e. /æ/ as a minimal pair with /ʌ/, informants in group 2 found that English /ʌ/ is nearer to their / a / in quality than /æ/, so in the majority of cases /ʌ/ is realized as [a]. The informants then make the distinction between the two sounds by producing [ɛ] for /æ/. This is interesting, it seems that the sounds the informants produce for one of the pairs are conditioned by the quality of the other, i.e. /æ/ → [a] when /æ/ is a minimal pair with /ɑ: /, /æ/ [ɛ] when /æ/ is a minimal pair with /ʌ/.

We find that /æ/ is pronounced as [ʌ] in 15% instances, and /ʌ/ as [æ] in 7% instances by informants in group 1, also /ʌ/ is pronounced variously as [ɒ], [ɔ], [ɑ:] by informants in group 2 in 13% of instances. We have observed the same phenomena with other pairs or triplets of sounds, although the percentages were not so high. These might be instances of over generalization. Since the informants are dealing with a pair of English sounds at a time, sometimes they produce one sound when they actually mean to produce the other and vice versa. At others, once the informants are used to producing a particular sound, they find difficulty in the adjustment involved in tongue position when there is a change to another sound, so they produce the same sound for a while.

ENGLISH /æ/ /ɑ: / and /ʌ/

/æ/	/ɑ: /	/ʌ/
cat	cart	cut
hat	heart	hut
ban	barn	bun
match	march	much
lack	lark	luck
ham	harm	hum

GROUP 1

Informant 1	Vowel produced	Number of instances
/æ/	æ	1
	ɛ	5
/ɑ:/	ɑ:	6
	ʌ	1
/ʌ/	ʌ	6
Informant 2		
/æ/	a	1
	e	5
/ɑ:/	a:	1
	D	3
	e:	1
	a	1
/ʌ/	D	3
	a	2
	e	1
Informant 3		
/æ/	ɛ	4
	a	2
/ɑ: /	ɑ:	1
	a	1
	a:	3
	D	1
/ʌ/	a	5
	D	1
Informant 4		
/æ/	ɛ	4
	ɑ:	2
/ɑ :/	ɑ:	5
	ɑu	1
/ʌ/	a	1
	ɑ	5
Informant 5		
/æ/	ɛ	6
/ɑ :/	ɛ	1
	ɑ:	2
	D	4
/ʌ/	ɑ	6
	ə	1

GROUP 1 (Continued)

Information 6	Vowel produced	Number of instances
/æ/	ɛ	5
	ɛ:	1
/ɑ:/	ɑ:	1
	a	2
	D	1
	ɛ	2
/ʌ/	ʌ	4
	ʌ	1
	a	1
Informant 7		
/æ/	ɛ	5
	ɜ:	1
/ɑ:/	ɑ:	1
	ɑu	3
	ɔ	1
	o:	1
/ʌ/	ʌ	3
	au	2
Informant 8		
/æ/	æ	1
	ɛ	6
/ɑ:/	ɑ:	1
	D:	3
	ɑu	1
	ɛ	1
/ʌ/	ʌ	2
	ʌ	2
	a	1
	ɛ	1
Informant 9		
/æ/	ɛ	6
/ɑ:/	D	3
	a	1
	o	1
	u	1
/ʌ/	ʌ	5
	D	1

GROUP 1 (Continued)

Informant 10	Vowel produced	Number of instances
/æ/	ɛ	5
	a	1
/ɑ:/	D:	2
	ɔ	1
	o	2
	a:	1
/ʌ/	ʌ	4
	D	1
	ɔ	1
Informant 11		
/æ/	æ	1
	ɛ	2
	a	2
	ɐ	2
/ɑ:/	ɔ	2
	o:	3
	o	1
/ʌ/	a	1
	D	1
	o	3
	u	1
Informant 12		
/æ/	ɛ	5
	ɑ	1
/ɑ:/	ɑ:	3
	D	3
/ʌ/	a	1
	ɑ	5
Informant 13		
/æ/	ɛ	6
/ɑ:/	ɑu	1
	o	5
/ʌ/	ʌ	2
	ɑu	1
	o	1
	u	1
		1

GROUP 1 (Continued)

Informant 14	Vowel produced	Number of instances
/æ/	ɛ	6
/ɑ:/	ɒ:	1
	o	2
	o:	3
/ʌ/	ʌ	4
	ɒ	1
	ə	1
Informant 15		
/æ/	ɛ	5
	ʌ	1
/ɑ:/	ɒ:	5
	o:	1
/ʌ/	ʌ	3
	ɒ	2
	3	1
Informant 16		
/æ/	ɛ	6
/ɑ:/	ɑ:	1
	ʌ:	1
	ɒ:	3
	o	1
/ʌ/		6

GROUP 2

Informant 1		
/æ/	ɛ	5
	ʌ	1
/ɑ:/	ɑ:	6
/ʌ/	ʌ	6
Informant 2		
/æ/	ɛ	2
	ʌ	4
/ɑ:/	ɒ	4
	ɔ:	1
		1

GROUP 2 (Continued)

Informant 2 (Continued)	Vowel produced	Number of instances
/ʌ/	a	2
	D	3
	o	1
Informant 3		
/æ/	æ	1
	a	4
	ɛ	1
/ɑ:/	D:	1
	D	4
	a	1
/ʌ/	ʌ	4
	a	1
	u	1
Informant 4		
/æ/	ɛ	4
	a	2
/ɑ:/	ɑ:	2
	D	1
	o	3
/ʌ/	ʌ	4
	o	1
	D	1
Informant 5		
/æ/	ɛ	2
	a	4
/ɑ:/	ɑ:	1
	D	2
	ɔ	3
/ʌ/	ʌ	4
	ɑ	1
	a	1
Informant 6		
/æ/	ɛ	5
	a	1
/ɑ:/	a:	2
	D	1
	ʌ	1
	a:	2
/ʌ/	ʌ	2
	a	5

GROUP 2 (Continued)

Informant 7	Vowel produced	Number of instances
/æ/	a	5
	a:	1
/ɑ:/	ɑ:	2
	ɑu	2
	D:	1
	a:	1
/ʌ/	a	6
Informant 8		
/æ/	æ	2
	ʌ	1
	a	2
	ɛ	2
/ɑ:/	ɑ:	6
/ʌ/	ʌ	5
	ɑ	1
Informant 9		
/æ/	ɛ	6
/ɑ:/	ɔ:	3
	ɔ	1
	ɑu	1
	ʌ	1
/ʌ/	ʌ	4
	ɔ	1
	D	1
Informant 10		
/æ/	æ	1
	a	3
	ɛ	2
/ɑ:/	ɑ:	2
	D:	1
	ɔ:	3
/ʌ/	a	4
	ɑu	1
	ɔ	1
Informant 11		
/æ/	ɛ	5
	a	1
/ɑ:/	D:	1
	ɔ:	2
	a:	3

GROUP 2 (Continued)

Informant 11 (Continued)	Vowel produced	Number of instances
/ʌ/	a	4
	o	1
	D	1
Informant 12		
/æ/	ɛ	4
	ɛ:	1
/ɑ:/	ɑ:	4
	a:	2
	a	1
/ʌ/	a	4
	ɑ	2
Informant 13		
/æ/	ɛ	6
/ɑ:/	D:	6
/ʌ/	a	6
Informant 14		
/æ/	ɛ	3
	a	3
/ɑ:/	ɔ	1
	D	1
	a:	3
	a	2
/ʌ/	a	5
	ʌ	1
Informant 15		
/æ/	æ	1
	ɑ	1
	a	2
	a:	1
	ɛ	2
/ɑ:/	ɑ:	5
	a:	1
	a	2
/ʌ/	a	4
	ɑ	1
	o	1
	[illegible]	1

GROUP 2 (Continued)

Informant 16	Vowel produced	Number of instance
/æ/		2
	a	2
		4
	3	1
/ɑ:/	:	1
	u	3
	:	1
	a	1
/ʌ/	a	5

ENGLISH /æ/, /ʌ/ and /ɑ:/

/æ/ is realized as [æ] in 3%, as [ɛ] in 80% as [e] in 5%, [a] in 6%, [ʌ] in 2% and [ɑ] in 2% instances by informants in group 1. Informants in group 2 produce /æ/ as [æ] in 8% instances, as [ɛ] in 61%, as [a] in 43%. /ɑ:/ is realized as [ɑ] in 21% instances, as [ɒ] or [ɒ:] in 33%, as [o] or [o:] in 20%, as [a] or [a:] in 9% and as [ɛ], [au], [ʌ], and [ɔ] in 17% by informants in group 1. The same vowel /ɑ:/ was produced as [a:] by informants in group 2 in 39% instances, as [ɒ] in 24%, as [ɔ] or [ɔ:] in 23% as [o] in 3%, as [a] or [a:] in 28% of instances by the same informants.

/ʌ/ was produced as [ʌ] in 43% instances, as [a] in 13%, as [ɒ], [o], [u] or [au] in 20%, as [ɑ:] in 13% and as [e] or [ə] in 11% by informants in group 1. It was produced as [ʌ] in 40% instances and as [a] in 53%, as [ɒ], [o] or [u] in 13% and as [a:] in 6% by informants in group 2.

In the previous chapter on vowels we noted that all three of the above English vowels were replaced by one Tonga vowel [a] in the informants' reading. The figures above however, show that this is not

the case here. The two vowels that still tend to overlap in their realization by the informants are /æ/ and /ʌ/. Informants in group 1 tend to keep these two vowels quite separate by producing [ɛ] for /æ/ in 80% of instances, and [ʌ] or [a] for /ʌ/ in 56% instances. The percentage of /æ/ being realized as [a] is high with informants in group 2, with 43% instances. The same group also produces [a] for /ʌ/ in 53% instances. This means that both /æ/ and /ʌ/ are undistinguishable from each other in 48% instances when they are both realized as [a] by informants in group 2 and they are distinguished from each other in 52% instances when /æ/ is realized as [ɛ] and /ʌ/ or [a].

Both the quality and quantity of /ɑ:/ are perceived by informants in both groups. Although the percentage of the realization as [ɑ :] itself is not high, the fact that various sounds with back quality have been produced by informants in both groups shows that the speakers have realized the importance of this back quality of /ɑ:/ as a distinguishing factor from the other two vowels. The quantity of /ɑ:/ has been distinguished too, as is shown by the fact that 50% of the sounds produced for /ɑ :/ by informants in group 1, and 70% of those produced by informants in group 2, are long ones.

The phenomenon of over-generalization, which we have observed elsewhere in this chapter is still evident here as is shown by the fact that /ʌ/ is produced as [ɒ,] [o,] [u,] and [ɑu] in 20% by informants in group 1 and as [ɒ], [o,] [u], in 13% by informants in group 2.

ENVIRONMENT

English /æ/ occurs more often as [ɛ] in all the words than [æ].

/ɑ:/ and /ʌ/ occur more often in the following words than any other:-

Group 1	Group 2
cart - 5	barn - 4
barn - 5	march - 4
harm - 5	hard - 5
march - 4	harm - 4

/ʌ/:-

Group 1	Group 2
hum - 7	hut - 4
much - 6	much - 4
bun - 6	luck - 4
cut - 5	hum - 4
luck - 5	

The phonological environment itself does not seem to provide any clue as to why there is a high incidence of the occurrence of /ɑ:/ and /ʌ/ in the above words. The words which seem to be common in both groups for the occurrence of English [ɑ:] seem to share some features. Two of them hard and harm have glottal fricative [h] as C_1, while two harm and March, have bilabial nasal [m] as C_2 and C_1 respectively. Similarly with those where English /ʌ/ has a high rate of occurrence, hum and much, one has bilabial nasal [m] as C_2 and the other as C_1 respectively. It is also to be noted that when we dealt with /æ/ and /ɑ:/ as a pair of contrastive sounds, /ɑ:/ occurred more often in the following words:-

cart

hard

harm

ENGLISH /D/ AND /ɔ:/

/D/	/ɔ:/
cock	cork
cod	cord
pot	port
shot	short
yon	yawn
don	dawn
stock	stork

GROUP 1

Informant 1	Vowel produced	Number of instances
/D/	D	5
	u	1
	ʌ	1
/ɔ:/	ɔ:	3
	D	1
	u:	1
	u	1
	:	1
Informant 2		
/D/	D	7
/ɔ:/	D	5
	ɐ	1
	u	1
Informant 3		
/D/	D	1
	ɑ	2
	o	2
	u	1
/ɔ:/	ɔ:	1
	D	1
	o	2
	o:	1
	ɑ:	1
	u	1

GROUP 1 (Continued)

Informant 4	Vowel produced	Number of instances
/D/	D	1
	ɔ	1
	o	4
	u	1
/ɔ/	ɔ:	1
	o:	2
	o	1
	u	3
Informant 5		
/D/	D	3
	Du	1
	o	1
	a	2
/ɔ:/	u	1
	D:	2
	Du	1
	o:	1
	o	1
	ɛ	1
Informant 6		
/D/	D	6
	o	1
/ɔ:/	D:	5
	D	1
	o	1
Informant 7		
/D/	ʌ	2
	o	5
/ɔ:/	o	3
	u	4
Informant 8		
/D/	u	1
	o	5
	e	1
/ɔ:/	u	4
	ʊ	1
	o:	1
	o	1

GROUP 2

Informant 1	Vowel produced	Number of instances
/D/	D	1
	ɔ	6
/ɔ:/	ɔ:	6
	ɔ	1
Informant 2		
/D/	ɔ	5
	a	2
/ɔ:/	ɔ:	2
		3
	a	2
Informant 3		
/D/	o	7
/ɔ:/	o:	4
	o	3
Informant 4		
/D/	D	7
/ɔ:/	ɔ:	7
	ɔ	2
Informant 5		
/D/	D	1
	ɔ	6
/ɔ:/	ɔ:	7
Informant 6		
/D/	o	7
/ɔ:/	o:	7
Informant 7		
/D/	ɒ	7
/ɔ:/	ɒ:	3
		2
	u:	2
Informant 8		
/D/	ɔ	7
/ɔ:/	ɔ:	7

ENGLISH /D/ AND /ɔ:/

/D/ is produced as [D] by informants in group 1 in 41% instances, as [o] or [o:] in 36%, as [u] in 20% and as [ɑ:] in 6%. Group 2 produced /ɒ/ as [D] in 23% instances, as [ɔ] in 82% and as [o,] or [o:] in 27%. Informants in group 1 produced /ɔ:/ in 10% instances as [D], or [D:] in 31%, as [o], or [o:] in 25% and as [u] in 34%. Informants in group 2 on the other hand produced /ɔ:/ as [ɔ:] in 88%, as [ɔ] in 13% and as [o], [o:] in 27% of instances.

It has been noted, in the last chapter on vowels, that all the informants in both groups produced [o] for both /D/ and /ɔ:/ in the reading. In this exercise, however, we find that [o] is produced for both /D/ and /ɔ:/ by both groups only in 26% of instances. And besides, within these 26% there are instances of long [o:] produced for /ɔ:/ which indicates that, even in instances where the informants still produce [o] for both phonemes, they have at least learnt to distinguish them by means of quantity, a practice which we have not observed in their reading.

The tendency among the informants in this particular exercise is not so much to produce [o] for /D/ or /ɔ:/ as to produce [D] for /ɔ:/, and vice versa. For instance, group 1 tend to produce [D] more often than [ɔ:], and group 2 the other way round. It is not clear whether this is simply another instance of over-generalization, or whether in fact one group finds it easier to produce one vowel sound, and the other group, another.

ENGLISH /D/ /ɔ:/ AND /əʊ/

/D/	/ɔ:/	/əʊ/
cot	caught	coat
not	naught	note
god	gored	goad

stock	stork	stoke
cod	cord	code
cock	cork	coke

ENGLISH /D/, /ɔ:/ AND /əʊ/

GROUP 1

Informant 1	Vowel produced	Number of instances
/D/D	D	5
/ɔ:/	ɔ:	6
/əʊ/	e	2
	3	3
	ʌ	1
Informant 2		
/D/	D	6
/ɔ:/	ɔ:	2
	D:	4
/əʊ/	3:	3
	e	2
	D	1
Informant 3		
/D/	o	3
	ʌ	3
/ɔ:/	o:	4
	D:	1
	ʌ	1
/əʊ/	3:	2
	ɛ	2
	ʌ	1
	o:	1
Informant 4		
/D/	D	1
	ɑ	1
	o	4
/ɔ:/	ɔ:	3
	o	1
	o:	1
	u	1
/əʊ/	ɛ	4
	i	2

GROUP 1 (Continued)

Informant 5	Vowel produced	Number of instances
/ɒ/	ɒ	4
	ɑ	1
	ɑʊ	1
/ɔ:/	ɒ:	5
	ɑʊ	1
/əʊ/	ɛ	5
	iʊ	1
Informant 6		
/ɒ/	ɒ	5
	oʊ	1
/ɔ:/	ɔ:	4
	ɒ:	1
	ou	1
/əʊ/	e	1
	oʊ	1
	ei	1
		3
Informant 7		
/ɒ/	o	6
/ɔ:/	u	4
	o:	2
/əʊ/	ɛ	6
Informant 8		
/ɒ/	o	5
	ʌ	1
/ɔ:/	o:	2
	o	2
	ə	1
	u	1
/əʊ/	ɜ	3
	ɜ:	1
	o	1
	u	1

GROUP 2

Informant 1	Vowel produced	Number of instances
/D/	D	2
	ɔ	4
/ɔ:/	ɔ:	6
/əʊ/	ɜ:	4
	ɛ	1
	ʌ	1
Informant 2		
/D/	ɔ	5
	ou	1
/ɔ:/	ɔ:	6
/əʊ/	ɔʊ	4
	o	2
INFORMANT 3		
/D/	o	5
	D	1
/ɔ:/	ɔ:	4
	oi	2
/əʊ/	ɛ	6
Informant 4		
/D/	D	5
	ɑ	1
/ɔ:/	ɔ:	6
	ɒ	2
/əʊ/	ɛ	4
	iʊ	1
	i:	1
Informant 5		
/D/	ɔ	6
/ɔ:/	ɔ:	6
/əʊ/	ɛ	4
	ɜ:	2

GROUP 2 (Continued)

Informant 6	Vowel produced	Number of instances
/D/	D	1
	o	5
/ɔ:/	o:	4
	ɔ:	2
/əʊ/	ɛ	2
	ɜ:	1
	ʊ	1
	o:	1
	oʊ	1
Informant 7		
/D/	ɔ	6
/ɔ:/	ɔ:	6
/əʊ/	ey	1
	ɛ	3
	ɜ:	2
Informant 8		
/D/	D	3
	ɔ	4
/ɔ:/	ɔ:	4
	ɔ	2
/əʊ/	ɛ	5
	ɜ	1

ENGLISH /D/, /ɔ:/ AND /əʊ/

/D/ is produced as [D] in 46% instances, as [o], [o:], [u], or [ʊ] in 38% instances, and as [ɑ:], [ɑu], or [ou] 8% and as [ʌ] in 8% by informants in group 1. Informants in group 2 produce [D] in 42% instances, [ɔ:] in 52% and [o,] [o:], or [u] in 21%.

/ɔ:/ is produced as [ɔ]: by informants in group 1 in 31% instances, as [o], [o:], [u], or [ʊ] in 44%, as [D] in 25%. Group 2 meanwhile, produced /ɔ:/ as [ɔ:] in 83%, instances, as [o], [o:], or [u] in 13%, as [ɔ] in 4%, and as [ʊ] in 4%. The diphthong /əʊ/

is realized as [əʊ] by informants in group 1 in 2% instances, as [ə] or [ɜ:] in 13%. as [ɒ], [ɔ:], [o] or [ou] in 25%, as [eʊ] in 21% and as [ɛ] or [e] in 29%. Informants in group 2 produced /əʊ/ in 6% as [ə], [ɜ:], as [ɒ], [ə], [o], or [ou], in 23%, as [eʊ] in 25% and as [ɛ] in 60%.

The first point to make is that there has been an increase in the production of both [ɒ] and [ɔ:] by informants in both groups. Although there is still a tendency for one group to produce one vowel more often than the other, as we observed before when we dealt with /ɒ/ as a pair with /ɔ:/, the pattern has changed slightly now. For instance, informants in group 1 have produced /ɔ:/ as such in [ɔ:] in 31% instances as compared to 10%, and informants in group 2 have produced /ɒ/ as [ɒ] in 42% instances as compared to the 23% previously observed. This is probably because the informants are hearing the same sounds repeated for the third and fourth time by now, and the change in percentages might reflect the fact that the informants are now accustomed to hearing the distinction between the two sounds, hence their attempts to produce the difference, are approaching nearer to the target sound each time.

We have noted that the diphthong /əʊ/ was one of the two which the informants reduced to a pure vowel in their reading. We indicated that it was reduced to the Tonga vowel /o/ or a long variety of it by most informants. We also tried to explain why it was felt the informants produced [o], [o:], or [ou] for the /əʊ/ diphthong. Perhaps we should add to the explanation already given, a point which seems to be quite significant here and that is the fact that the diphthong

/əʊ/ has as its starting point, the central part of the tongue, an area which is nonfunctional for a Tonga, since there are no vowel sounds made in this part of the tongue in the Tonga language. It goes towards [ʊ], a sound which is normally not distinguished from [u] by a Tonga speaker. This point seems relevant here in view of the various sounds that the informants produced for this diphthong. Of all the English sounds we have dealt with so far, this was perhaps one of the most difficult for the informants to produce if followed by [æ]. The writer vividly recalls that she had to replay each word with this sound, several times before an informant produced a sound he felt was a close imitation to what he felt he had heard from the tape. With /æ/, most informants made a rapid choice between reproducing it as [a] or [ɛ] without any apparent conscious effort.

According to the figures above, the sound [əʊ] has been produced for /əʊ/ by both groups in 8% of instances only. This illustrates the extent of the difficulty. It seems the informants were able to produce the first element of the diphthong in a few cases, but not the second. On the whole however, the diphthong has been produced mostly as an [ɛ] by both groups. For instance group 1 produced [ɛ] and [e] in 29% of instances, while group 2 produced the same sounds in 60% of instances. This is not surprising, it has been noted before that the English central vowel /3:/, which differs only in quantity from the first element [ə] of /əʊ/ diphthong, has been realized as [ɛ] in more than 50% of its occurrence by informants in both groups.

ENVIRONMENT

English /D/ tends to occur more often in the following words than any other:-

Group 1	Group 2
cock - 5	cock - 3
stock - 6	cod - 3
not - 4	

ENGLISH /ɔ:/

cork - 4	cork - 8
cord - 3	cord - 8
caught - 3	stork - 8

/əʊ/ as [ɜ:] or [ə]

coat - 2	coat - 2
goad - 3	goad - 2
code - 2	code - 4

Perhaps the most interesting feature about the phonetic environment in which the three sounds appear is the presence of velars and alveolar consonants either as consonant initial or final in all the words.

ENGLISH /ʊ/	/u:/
/ʊ/	/u:/
full	fool
pull	pool
good	goose
foot	food
hook	whom
look	loop

GROUP 1

Informant 1	Vowel realized as	Number of instances
/ʌ/	ʌ	5
	D	1
/ɑ:/	ɑ:	6
Informant 2		
/ʌ/	ʌ	3
	u	2
	ɔʌ	1
/ɑ:/	u:	4
	D	1
	e	1
Informant 3		
/ʌ/	u	6
/ɑ:/	u:	1
	u	4
	ɛ	1
Informant 4		
/ʌ/	ʌ	2
	u	3
	D	1
/ɑ:/	u	3
	ɑ:	1
	ʌ	1
	i	1
Informant 5		
/ʌ/	ʌ	3
	D	3
/ɑ:/	ʌ	3
	ɛ	1
Informant 6		
/ʌ/	ʌ	3
	u	3
/ɑ:/	u:	1
	u	3
	ɛ	1
	i	1

GROUP 1 (Continued)

Informant 7	Vowel realized as	Number of instances
/ ɤ/	ɤ	1
	u	4
	o	1
/ ʉ /	u:	1
	u	4
	ɛ	1
Informant 8		
/ ɤ /	u	5
	o	1
/ ʉ: /	u	6

GROUP 2

Informant 1		
/ ɤ /	u	6
/ ʉ: /	u:	6
Informant 2		
/ ɤ /	u	6
/ ʉ: /	u:	1
	u	4
	ɤ	1
Informant 3		
/ ɤ /	ɤ	2
	u	6
/ ʉ: /	u:	3
	ɤ	2
	u	1
Informant 4		
/ ɤ /	u	6
/ ʉ: /	u:	1
	u	5
Informant 5		
/ ɤ /	u	6
/ ʉ: /	u:	6
	u	1

GROUP 2 (Continued)

Informant 6	Vowel realized as	Number of instances
/ ʊ /	ʊ	3
	u	4
/ u: /	u:	1
	ʊ:	2
	ʊ	1
	u	1
Informant 7		
/ ʊ /		1
	u	5
/ u: /	u:	4
	3:	1
	i:	1

ENGLISH / ʊ / AND / u: /

/ ʊ / is produced as [ʊ] by informants in group 1 in 35% of instances, as [u] in 48%, as [ɒ] , [o] , or [oʊ] in 17%. Informants in group 2 produce [ʊ] in 10% of instances, and [u] in 94%.

/ u: / is produced as [u:] by informants in group 1 in 29%, as [u] in 42%, as [ʊ] in 8% and as [ɒ] , [ɛ] , or [iu] in 14%. Informants in group 2 produce /u:/ as [u:] in 56%, as [u] in 27%, as [ʊ] , or [ʊ:] in 15% and as [3:] or [i] in 4%. The case of /u:/ and /ʊ/ is similar to that of /i:/ and /I/ . Tonga has an [u] sound which is almost equivalent in quality to the English one, the main difference being that of quantity. The English one is longer than the Tonga. As in the case of English /i:/ and /I/, Tonga has only the one sound [u] in this area against the two of English. Hence in the chapter on pronunciation performance in English vowels, we found that almost all our informants pronounced both /u:/ and /ʊ/ as [u] . In this particular exercise, however, we find that both groups of informants perceive a difference between the two vowel sounds in different ways. As in the case of /i:/ and /I/, group 1 tend to perceive the distinction in terms of quality, as is illustrated by the fact that /ʊ/ is produced as [ʊ] in 35% instances, while /u:/ is realized as [u:] only in 29%. Other-

wise it is realized as the Tonga variety [ʊ] which is shorter in quantity than the English one. With informants in group 2 /ʌ/ produced as [ʌ] only in 10% of instances, otherwise it is realized as the Tonga [ʊ]. English /ʊ:/ on the other hand is produced as [ʊ:] in 56% of instances, and as Tonga [ʊ] in 27% instances only. This might mean that informants in group 2 associated Tonga /ʊ/ with English /ʌ/, quantitatively and distinguished it from English long /ʊ:/ on the same basis. On the other hand, quality seems to have had a stronger significance for informants in group 1 in this particular case, so they associated English long /ʊ:/ with Tonga /ʊ/ on that basis and then tried to produce a sound that approximated to /ʌ/ in quality.

ENVIRONMENT:- English /ʌ/ and /ʊ:/ occur more often in the following words than any other:-

Group 1	Group 2
full - 2	full - 3
pull - 2	pull - 6
/ʊ:/	
food - 6	food - 3
whom - 6	
loop - 5	

To conclude this chapter, it has been found that on the whole the informants have been able to make a distinction between the various vowel sounds. Their ability to hear this distinction is illustrated by the various attempts they have made to produce the difference in their own pronunciation. The two English vowel sounds that proved to be difficult for the informants to produce are /æ/ and /əʌ/, as is illustrated by the fact that these two sounds have been produced as [æ] and [əʌ] in 11% and 8% of instances by informants in both groups

respectively.

On the whole no one group did better than the other in this exercise. There are instances where one group produced the target sound in more instances than the other, for instance it has been found that group 1 produced English /I/ in more instances than group 2, but the latter group produced /i:/ in more instances than the former. Perhaps the one area where group 2 could be said to have done better than group 1 is in the production of English /3/ and /ei/. The figures on these sounds show group 2 in the lead in being able to pronounce the difference between English /ɛ/ and /3:/ and /eI/.

ii) Consonants:

In general most of the consonants were produced quite well. Observations will be made only on those where there seem to be some significant points to make.

Plosives and Affricates:- The only point to make about these two groups of sounds is that, there is a fairly wide spread tendency by informants in both groups to pronounce the lenis plosives and affricates as fortis consonants. This feature seems to occur mainly when a lenis plosive or affricate is in final position, although there are a few cases noted when the lenis consonant is in an initial position.

Examples:-

bead	[bi:t]
bid	[bit]
bed	[bɛt]
head	[hɛt]
heard	[hɜ:t]
bank	[pæŋk]
bird	[pɜ:t]
goat	[k'ɜ:t]
edge	[ɛtʃ] [ɛt]
page	[pɛtʃ]

Perhaps this is not surprising since according to English phonology, lenis plosives or affricates are not voiced in both these positions. They are distinguished from the fortis series in these positions by other factors, such as aspiration of the fortis series in initial position and length of vowel in a syllable closed by a lenis consonant.

The phenomenon of producing the English lenis plosives with extra articulatory force which has been observed in the chapter on Pronunciation Performance in English Consonants was not evident in this exercise. It was observed four times in informant 15 and once in informant 16 of group 2, and in all cases it involved the bilabial plosive [b]

Fricatives - The one point to make about the pronunciation of English fricatives is the occasional voicing of the glottal fricative /h/ →[ɦ] which we have already observed in the chapter on Pronunciation Performance in English Consonants, in which an explanation for it has been offered:

/ l / and / r / distinction

In the chapter on Pronunciation Performance in English Consonants, it was observed that informants in both groups experienced difficulties relating to the distinction between the above two sounds. We noted too that even though the informants may not have pronounced the other consonants in the same way as an English speaker who has an intimate (unconscious) knowledge of the phonology of his own language, they were pronounced well enough to be understood by most people in the English speaking communities. The problem of / l / and / r / distinction is crucial precisely because it does pose a threat to understanding not only at an international level, but among Zambians who themselves use English as a lingua Franca. For this reason it was decided that the problem of / l / and / r / distinction should receive further attention in this work. To this end, a list of words containing these two phonemes were read out by the English speaker and tape recorded. The tape was subsequently played to the informants, and they were asked to repeat what they heard.

The following is a representative sample of the results of the exercises:-

Group 1

Informant 1

long	[lɒŋ]	wrong	[rɒŋ]
lead	[li:d]	read	[ri:d]
belly	[bɛli]	berry	[bɛri]
light	[lait]	right	[rait]

Informant 3

long	[lɒŋ]	wrong	[rɒŋ]
lead	[ri:d]	read	[ri:d]
belly	[bɛri]	berry	[bɛri]
light	[lait]	right	[rait]

Informant 7

long	[lɒŋ]	wrong	[lɒŋ]
lead	[li:d]	read	[lɛt]
belly	[bɛn]	berry	[bɛri]
light	[lait]	right	[lɛt]

GROUP 2

Informant 1

long	[lɔŋ]	wrong	[rɔŋ]
lead	[li:d]	read	[rwi:d]
belly	[bɛli]	berry	[bɛrwi]
light	[lait]	right	[rɒt]

Informant 3

long	[lɔŋ]	wrong	[rɔŋ]
lead	[li:d]	read	[ɾwid]
belly	[bɛʃi]	berry	[bɛɾi]
light	[lait]	right	[ʃait]

GROUP 2 (Continued)

Informant 5

long	[lɔŋ]	wrong	[rɔŋ]
lead	[li:d]	read	[rwid]
belly	[bɛri]	berry	[bɛri]
light	[lait]	right	[lait]

There are still some difficulties experienced by informants in both groups as far as these two phonemes are concerned. In the last exercise dealing with / l / & / r / distinction, we found that the informants used [l], [r] and [ɾ] in free variation.

In this exercise, a kind of pattern seems to be emerging. Of the 8 informants in group 1 who took part in this exercise, 5 informants have managed to pronounce the words with the /r/ phoneme correctly, but they still use [l], [r] and [ɾ] in free variation in words with /l/; 3 of the informants still experience difficulty both ways, i,e they use [l], [r], and [ɾ] in free variation in words with / l / and / r / phonemes. In group 2, of the 8 informants who undertook this exercise, 3 managed to pronounce the distinction between / l / and / r /. 2 managed to pronounce words with / r / as [r], but they used [l], [r], and [ɾ] in free variation in words with / l /, and 3 used the three phones in free variation both ways. This means that more than half the informants have either managed to pronounce the difference, or have partially managed to do so, in the sense that they have managed to keep the / r / phoneme wherever it occurs, distinct from / l / in this exercise. The

reason for this might be that since [r] is an unusual sound as far as the Tonga informants are concerned, extra effort and care might haye been made by the informants towards its production. [l] on the other hand is a familiar sound and would not require as much conscious effort in its production as the other, hence the tendency to over-generalize. This observation ties in well with what has been noted before with other English sounds, namely, that English sounds that are completely absent from Tonga are more likely to be learnt and mastered as such by a Tonga speaker, than those which share similarities with sounds present in Tonga. The case of /l/ and / r / has been complicated by the fact that the two phonemes corresponds to the same phoneme in Tonga. Therefore, the problem of mistaking one phoneme for the other is inevitable for a Tonga speaker in the early stages of learning English. But as this exercise seems to show, when a Tonga speaker repeats after someone who makes the appropriate distinction between the two phonemes, it seems to be the / l / phoneme which is mixed up with / r /, but / r /, seems to be pronounced well enough in more than 50% cases.

Dark [ɫ] - In the previous exercise on / l / and / r / distinction, we indicated that most of the informants experienced difficulties with the pronunciation of [ɫ] , an allophone of the English / l /. We noted that most of them omitted the sound altogether and produced a long vowel in its place. No specific exercise was carried out to test [ɫ] in this section, but a number of words which were used for the exercise on vowels were analysed. The following is the list of words analysed:-

sell	[selo] [saʊ]	sale	[sɛ:lo] [sɛ:]
tell	[teʊ]	tale	[teʊ]

hell	[hɛt]	hail	[hei]
felled	[fɛɬəd]	failed	[fɛɬəd]
meal	[milu]	mill	[milu]
peal	[pilu]	pill	[pilu]
full	[fʊ]	fool	[fut]
pull	[pʊ]	pool	[put]

The above list shows that the tendency which has been observed in the previous section still persists even when the informants repeat after someone who speaks English as a first language. The main difference is that in this exercise the practice of replacing [t] with a long vowel is not common, instead we have what Gimson noted among English speakers of Cockney dialect, that is, replacing [ɬ] with a vowel. Gimson observed that the vowel sounds which commonly replace [ɬ] among Cockney speakers are [ʊ̈] or [ɤ]. Among my informants, however, it sounds like English [ʊ]. Another feature which is common is that of adding an epenthetic vowel after the [ɬ], and so converting the [ɬ] into a clear [l]. It must be pointed out that all these observations have been noted among informants in group 1, most informants in group 2 seem to have pronounced the [t] well.

CONSONANT CLUSTERS:-

In the previous exercise on consonant clusters it was noted that, in general, informants in both groups pronounced English consonant clusters with an epenthetic vowel, the nature of which has been observed to vary from a full front or back vowel, to a short vowel sound with a front or back vowel resonance. It has also been noted that sometimes there is no vowel sound as such to be heard but a succession of consonant sounds where English would normally have an incomplete plosion. Because of the irregularities noted above in the informants pronunciation of English consonant clusters, it was decided that a similar exercise to that on vowels, / l / / r / distinction which has just been discussed in this section, should be conducted.

This exercise involved reading out a list of words with various English consonant clusters by the English speaker which were tape-recorded and subsequently played to the informants for repetition.
The following is a representative sample of their responses:-

	Group 1	Informant 1
pl	play	[purei]
pr	pray	[prei]
bl	blue	[bᵘru:]
br	brew	[bru:]
kl	cloud	[krɑvd]
kr	crowd	[kra:ud]
gl	glass	[kra:s]
gr	grass	[kra:s] [gras]

	Group 1	Informant 1 (Continued)
tr	tree	[tᵘrei]
	train	[tᵘrein]
	tractor	[træktə]
dr	dry	[dᵘrai]
	drain	[dᵘrein]
	drum	[dᵘrʌm]
fl	fly	[frai]
fr	fry	[frai]
θr	three	[θri]
	throw	[θᵘrəʊ]
	through	[θuru]
sp	spoon	[spun]
	sport	[spɔ:t]
	speak	[spik]
st	stick	[stik]
	stamp	[stʌmp]
	store	[stɔ:]
sk	skirt	[skɛt]
	school	[skul]
	scooter	[skutə]
sm	smile	[smait]
	smart	[smat]
	small	[smɔ:ɬ]
sn	snow	[snei]
	sneeze	[sniz]
	snake	[snɛik]
sl	slow	[slo:]
	sleep	[slip]
	slim	[slim]
spl	splash	[spulaʃ]
	splean	[spulin]
	split	[spᵘlit]
spr	spring	[spuriŋ]
	spray	[spᵘrei]
	spread	[spred]
str	strong	[stroŋ]
	strict	[strikt]
	street	[strit]
skr	scratch	[skrɛtʃ]
	scream	[skrim]
	scrape	[skræp]

	Group 1	Informant 1 (Continued)
skw	squeak	[skwik]
	squirrel	[skwiɬ]
	square	[skwɛə]
ʃr	shrub	[ʃrʌmp]
	shrink	[ʃriŋk]
	shrine	[ʃain]

	Group 2	Informant 5
pl	play	[plei]
pr	pray	[prei]
bl	blue	[blum]
br	brew	[brum]
kl	cloud	[klavd]
kr	crowd	[krɔid]
gl	glass	[glais]
gr	grass	[gra:s]
tr	tree	[trei]
	train	[trein]
	tractor	[traktə]
dr	dry	[drai]
	drain	[drein]
	drum	[drʌm]
fl	fly	[flai]
fr	fry	[frai]
θr	three	[θri]
	throw	[θrɔ]
	through	[θru]
sp	spoon	[spon]
	sport	[spot]
	speak	[spi:k]
st	stick	[stik]
	stamp	[stamp]
	store	[stɔ:]
sk	skirt	[skɛt]
	school	[skɔ:l]
	scooter	[skutə]
sm	smile	[smail]
	smart	[smɔk]
	small	[smɔl]
sn	snow	[snei]
	sneeze	[sni:z]
	snake	[snɛik]

	Group 2	Informant 5 (Continued)
sl	slow	[slɔ:]
	sleep	[sʃip]
	slim	[slɜm]
spl	splash	[spʷlaʃ]
	spleen	[spʷlin]
	split	[split]
spr	spring	[spriŋ]
	spray	[spreɪ]
	spread	[spred]
str	strong	[stroŋ]
	strict	[strikt]
	street	[strit]
skr	scratch	[skrætʃ]
	scream	[skrim]
	scrape	[skreip]
skw	squeak	[skwik]
	squirrel	[skwɛ:t]
	square	[skwɛə]
ʃr	shrub	[ʃrʌb]
	shrink	[ʃriŋk]
	shrine	[ʃrain]

Generally speaking there do not seem to be any new trends developing in this exercise, as far as the pronunciation of consonant clusters by the informants is concerned. Most informants in both groups still add an epenthetic vowel to separate the consonant cluster. Of the 15 informants who took part in this exercise, 6 added an epenthetic vowel in clusters involving plosives as first and second elements of a cluster. 5 of these are from group 2, 1 from group 1 e.g.

train	[tʷrein]
dry	[dʷrai]
spring	[spʷriŋ]
scratch	[skʷrat∫]
strong	[stʷroŋ]

3 of the informants, all from group 1 added an epenthetic yowel not only in the two positions mentioned above, but even in clusters involving fricatives as first elements. We noted in the last exercise on English consonant clusters that an epenthetic vowel could only be detected in a few of the informants' pronunciation of consonant clusters involving fricatives as first element, and we sugggested that the reason for this lay in the nature of the fricatives themselves. The fricatives where the epenthetic vowel tended to be audible most frequently were [θ] and [ʃ], although there were a few cases in [f] and [s] as well, e.g

three	[θifi]
throw	[θuro]
through	[θuru]
shrub	[ʃirʌb]
shrine	[ʃirain]

Six informants, three from group 1 and three from group 2 managed to produce almost all the consonant clusters without an audible yowel sound, but all three informants from group 1, experienced difficulty with the following:

Fricative + plosive + liquid -

spleen	[spulin]
split	[spulit]
splash	[spulaʃ]
street	[sturit]

One informant from group 2 had difficulty with the following:-

dry	[durai]
drain	[durein]
drum	[durʌm]

Inconsistencies in the individual's pronunciation are even more marked here than in the previous exercise. It is possible to find a consonant cluster involving a plosive as first or second element pronounced with an epenthetic vowel in one word and without in another etc.

CONCLUSION.

To conclude this study it has been observed that on the whole the English consonants, except the liquids /l/ and /ɾ/, have been pronounced adequately by the informants. Minor observations have been made concerning the pronunciation of plosives.

It was noted that there was a tendency among some informants to produce the voiced plosives with extra articulatory force, a feature which is characteristic of the Tonga voiced plosives. With /l/ and /r /, the situation was rather different. It was found that the informants tended to use not only these two phonemes, but also the alveolar lateral flap [ɾ] , which is an allophone of the Tonga alveolar lateral /l/, in free variation with [l] . We tried to explain this tendency by making three suggestions. Firstly, the fact that the two English phonemes /l/ and /ɾ/, have some features in common. Secondly, the absence from the Tonga sound system of the /r/ phoneme which coupled with the first observation might lead a Tonga speaker into believing that the [l] and [r] sounds are allophones of one phoneme. Closely associated with the above observations, is the fact that in Tonga, the alveolar lateral [l] and the flapped allophone [ɾ] appear in free variation. This situation in Tonga, might have led the informants into believing that [r] is yet another allophone of [l] to be used in free variation with [l] and [ɾ] .

It was also observed that informants in both groups were able to produce without any difficulty some English sounds which do not occur in their own language. The sounds involved in the particular circumstances were the labiodendal, and dental fricatives.

When it came to consonant clusters, it was observed that generally informants pronounced them with an epenthetic vowel. The presence of this vowel was more obvious in clusters involving plosives as C_1 or C_2 than those involving fricatives as C_1 followed by a liquid consonant. The quality of the epenthetic vowel was found to be determined by the nature of the consonants on either side of it, and in some cases by the quality of the vowel coming immediately after the cluster. Generally speaking, the bilabial and alveolar plosives followed by a liquid gave rise to an epenthetic vowel with a back vowel [u] resonance, while the velar plosives followed by a liquid tended to give rise to an epenthetic vowel with a front vowel [i] resonance in the case of /l/, and a back vowel [u] in the case of /r/. In the few occasions when an epenthetic vowel was audible in a cluster involving a fricative and a liquid, it was observed that the quality of the epenthetic vowel is determined by that of the vowel immediately following the cluster. When the informants managed to produce a cluster without an epenthetic vowel, the sounds came in a sequence whereas in English the cluster would normally involve an incomplete plosion.

As far as the vowels are concerned, it was noted that generally, the informants' pronunciation performance in these sounds showed more significant differences from that of standard English than the performance in English consonants. Informants replaced two or more English vowels with one Tonga vowel in their reading if the English vowels in question shared the quality of openness or closeness with that Tonga vowel. However, it was also noted that when the informants listened and repeated after a speaker of English as a first language, they were able in most cases to make a distinction of some kind between the various English

vowels which they had not been able to make in their first pronunciation performance.

At the suprasegmental level, it was found that informants in both groups tended to replace English stressed and unstressed syllables by Tonga high and low tones respectively. The informants' pitch patterns showed a tendency towards down-drift, a feature which is characteristic of the Tonga tonal system. This tendency when analysed according to O'Connor and Arnold's intonation system, showed approximation to the English sliding head and low-fall nucleus.

What has struck me in the course of writing this work is how the informants' speech habits in the target language seem to correlate not only to what happens in the informant's first language but also to what is happening in the target language. For instance, we noted that in the informants' pronunciation of English /l/ and /r/ that the informants were not simply substituting the two English phonemes for the Tonga /l/, but that there seem to be a complex interaction of factors i.e. the presence in English and absence from Tonga of the [r] sound, and the treatment of the [l] sound in Tonga phonology, which seem to have influenced the informants' pronunciation of the two sounds. We also noted that the expenditure of additional articulatory force in the pronunciation of some plosives is not only connected with the fact that this happens in Tonga, but also with the fact that the force tended to fall on plosives appearing in stressed syllables in English. However, our evidence was not conclusive on this matter.

As far as the vowels were concerned, we noted that there was a definite rule present both in Tonga and English governing the informants' choice of the Tonga vowel that would be substituted for the English. We

found that the question of whether a vowel was front, central, or back did not seem to influence the informants' choice, but if a Tonga vowel shared the quality of open-or closeness with one, two or more English vowels, then those English vowels would all be replaced by that Tonga vowel.

At the suprasegmental level, it was observed that Tonga high tone replaces the English stressed syllables and the low tone, the weak ones all the time. We speculated that the reason for this might lie in the difference in use made of stress in the two languages. English uses stress for emphasis and contrastive purposes, while Tonga uses tone in both cases. Stress in Tonga seem to have only a limited function, and that is that, in certain circumstances it is associated with or replaces high tone. This seems to imply that stress and high tone can have the same function in Tonga. These points seem to tie up with what has been said before in section 2 of this work that it is those areas where the informants' first language seem to bear some similarity to the target language where the informants seem to experience most difficulty.

The third section of this work has demonstrated that there is a difference between the pronunciation of the Tonga informants in the first section where they produced the English sounds they have learnt at school, and that of the third section where they repeated after a speaker of English as first language acting as a model.

FOOTNOTES

Chapter 2

1. The bilabial voiced plosive [b] is represented as <bb> in Tonga orthography to distinguish it from the bilabial fricative [β] which is represented as <b>

2. It should be pointed out that in Tonga orthography [ɟ], [j] and [tʃ] are represented by one common symbol <c>

3. [hw] and [ɦw] are represented orthographically as <fw> and <vw> /i/, /e/ and /a/ and as <f> and <v> /o/ and /u/.

4. The Tonga velar fricative is not distinguished orthographically from the velar plosive /k/. Both of them being represented by the letter <k>.

5. See Fortune on murmured sounds in Shona - Shona phonology p. 1.6. (Unpublished).
   Fortune - Phonology of Shona - Edited.

6. Pike: Tone Languages p. 3.

7. See A.E. MEEUSSEN "Morphotonology of the Tonga verb" Journ Af Lang, 2-1963 p. 72-93 and H. Carter - Morphotonology of Zambian Tonga: some developments of Meeussen's system" part I: Af Lang Stud, xii 1971 p. 1-30; part II: Af Lang Stud, xiii 1972, p. 52-87.

8. A 'high tone' verb is one which has a high tone on the prefix in the class 15 (infinitive) form, e.g. ku-siba to whistle. Conversely a 'low tone' verb has low tone in this position e.g. ku-sika - to arrive.

Chapter 3

9. Ladefoged - A Course in Phonetics - p. 69.

10. Article by A.C. Gimson in Phonetics in Linguistics - a book of readings by W.E. Jones and J. Laver p. 95.

11. Daniel Jones - An Outline of English Phonetics p. 245.

12. Ladefoged - A Course in Phonetics p. 97.

13. Daniel Jones - An Outline of English Phonetics - pp. 131-135.

14. O'Connor and Arnold - Intonation of Colloquial English p. 5.

15. Gimson - An Introduction to the Pronunciation of English p. 278.

16. Allen and Corder - Papers in Applied Linguistics pp. 114-118.

17. Dr. Hazel Carter - Paper on "intonation and Stress patterns in some Caribbean Creoles and British English". (Unpublished).

18. For full table of intonation tunes and their connotations see page 272.

Section 2

Chapter 4

18. Gimson - An Introduction to the pronunciation of English p. 203.

19. In the case of the word splash, the interviewer brought a bucket full of water into the classroom and then asked the informants from group 1 to organize themselves into a circle with the bucket in the middle. Then the interviewer dropped a stone in the bucket causing the water to splash about the floor. However, when asked what had just happened to the water, the informants did not have an answer. The interviewer was more successful with the word spray. She carried an insecticide spray in the classroom and sprayed around the room. When she asked the informants what they thought she was doing, they all replied, "spraying."

20. Daniel Jones - An Outline of English Phonetics: pp. 179

Chapter 5

21. O'Connor and Arnold - Intonation of Colloquial English p. 37-38.

22. It is regretted that owing to lack of time the exercise on the English suprasegmental features was not performed in this section.

(i) Intonation, sentence-types & meaning

(Summary of O'CONNOR & ARNOLD 1973, pp.47-88)

Intonation Pattern	Sentence type	Attitude conveyed
1. Low Drop	Statements	No head: detached, cool, dispassionate, reserved, dull, possibly grim .
		High head: categoric, weighty judicial, considered.
	WH-questions	No head: detached, flat, unsympathetic, even hostile.
		High head: searching, serious, intense, urgent.
	Yes-no questions	No head (tags used as comment): uninterested, hostile
		High head: serious, urgent
	Commands	No head: unemotional, calm controlled, cold.
		High head: very serious, very strong.
	Interjections	No head: calm, unsurprised, reserved, self-possessed.
		High head: very strong.
2. High Drop	Statements	Involved, light, airy
	WH-questions:	Brisk, business-like considerate, not unfriendly: lively, interested.
	Yes-no questions	Willing to discuss, but not urgently; sometimes sceptical; (question tags as comment) mildly surprised acceptance.
	Commands	Suggesting course of action, not worrying about not being obeyed
	Interjections	Mildly surprised, not reserved/ self-possessed as Low Drop
3. Take-off	Statements	Encouraging further conversation, guarded, reserving judgment, appealing to listener to change his mind, deprecatory; (contradictions) resentful; (non-final) deprecatory.

Intonation Pattern	Sentence type	Attitude conveyed
3. Take-Off (Continued)	WH-questions	(nuclear tone on question-word) wondering, mildly puzzled; (otherwise) very calm but disapproving and resentful.
	Yes-no questions	Disapproving, sceptical
	Commands	("Don't..") appealing to listener to change mind; (some short commands) calmly warning, exhortative.
	Interjections	Sometimes reserving judgment, sometimes calm, casual acknowledgement.
4. Low Bounce	Statements	Soothing, reassuring, hint of self-confidence and self-reliance; (in echoes) questioning with surprise and disbelief; (non-final) creating expectancy about what is to follow.
	WH-questions	(nuclear tone on question-word) puzzled; (in echoes) disapproving; (otherwise) sympathetically interested.
	Yes-no questions	Genuinely interested.
	Commands	Soothing, encouraging, calmly patronising.
	Interjections	Airy, casual yet encouraging, often friendly, brighter than Take-Off.
5. Switchback	Statements	Grudging admission, reluctant or defensive dissent, concerned, reproachful, hurt, reserved, tentatively suggesting; (echoes) greatly astonished.
	Questions	(echoes) greatly astonished; (otherwise) interested and concerned as well as surprised.
	Commands	Urgently warning with note of reproach or concern.
	Interjections	Scornful.

Intonation Pattern	Sentence type	Attitude conveyed
6. Long Jump	Statements	Protesting, suffering under sense of injustice
	WH-questions	Protesting, unpleasantly surprised
	Yes-no questions	Willing to discuss but protesting need for settling crucial point
	Commands	Recommending course of action but with note of critical surprise
	Interjections	Protesting, surprised
7. High Bounce	Statements	Questioning, trying to elicit repetition (but no suggestion of disapproval or puzzlement; (non-final) casual, tentative
	WH-questions	(nuclear tone on question-word) calling for repetition; (nuclear tone following qu-word) echoing listener's question before answering it, or tentative, casual
	Commands, Interjections	Querying all or part of listener's command or interjections, but no critical intention
8. Jackknife	Statements	Impressed, awed; challenging, censcrious; disclaming responsibility
	WH-questions	Challenging, antagonistic; disclaiming responsibility
	Yes-no questions	Impressed; challenging, antagonistic
	Commands	Disclaiming responsibility, sometimes hostile
	Interjections	Impressed, sometimes hint of accusation

Intonation Pattern	Sentence type	Attitude conveyed
9. High Dive	Statements	Appealing to listener to continue; expressing gladness, regret, surprise
	Questions	Very emotive, expressing plaintiveness, despair, gushing warmth
	Commands	Pleading, persuading
	Interjections	Intensely encouraging, protesting
10. Terrace	All types	(Non-final) marks non-finality, without conveying sense of expectancy
	Statements & Interjections	(Final groups) calling out as from a distance

II

SELECTED SAMPLE OF THE RESULTS OF PRONUNCIATION PERFORMANCE IN ENGLISH CONSONANTS.

ENGLISH PLOSIVES

Group 1		/p/	Group 2	
people	[pi:po]	[pipo]	[pi:po]	[pi:po]
perhaps	[pəhæps]	[pəhaps]	[pəhæps]	[pəhaps]
pulled	[putd]	[pufd]	[puid]	[puld]
		/b/		
because	[bikɔz]	[bikɔs]	[bIkɔs]	[bIkɔs]
bare	[bɛə]	[b̤ɛə]	[b̤ɛə]	[b̤ɛə]
boat	[boit]	[boit]	[boit]	[b̤ʰoit]
		/t/		
time	[taim]	[taim]	[taim]	[taim]
hot	[hot]	[ɦot]	[hot]	[hoti]
water	[wɔtə]	[wotə]	[wɔtə]	[wotə]
		/d/		
day	[dɛi]	[dɛi]	[dɛi]	[dɛi]
hard	[had]	[hɛd̤]	[had̤]	[had̤]
sadly	[sədəli]	[sɛdəli]	[sædli]	[sədəli]
		/k/		
catch	[katʃ]	[katʃ]	[kɛtʃ]	[katʃ]
rock	[rok]	[roik]	[rok]	[rok]
because	[bikɔz]	[bikɔs]	[bIkɔs]	[bIkɔs]
		/g/		
get	[gɛt]	[gɛt]	[gɛt]	[gɛt]
big	[big]	[big̤]	[b̤ig]	[big]
ago	[əgo]	[əgo]	[əgo]	[əgo]

AFFRICATES

Group 1			Group 2	
	/tʃ/			
catch	[kɑtʃ]	[kɑtʃ]	[kæetʃ]	[kɑtʃ]
much	[mɑtʃ]	[mɑtʃ]	[mɑtʃ]	[mɑtʃ]
	/dʒ/			
page	[pɛdʒ]	[pɛdʒ]	[pɛdʒ]	[pɛdʒ]

NASALS

	/ɱ/			
money	[mʌn]	[mʌn]	[mʌnə]	[mʌn]
farmers	[fɑməz]	[fɑməz]	[fɑməz]	[fɑməz]
same	[sɛm]	[sɛm]	[sɛm]	[sɛm]
	/ɳ/			
name	[nɛm]	[nɛm]	[nɛm]	[nɛm]
morning	[moniŋ]	[moniŋ]	[mo:niŋ]	[moniŋ]
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]

LATERALS

	/l/			
lakes	[rɛks]	[lɛks]	[lɛks]	[lɛks]
cold	[ko:d]	[kod]	[ko:d]	[ko:d]
full	[fut]	[fu:]	[ful]	[ful]
only	[onəli]	[onələ]	[onəli]	[onəli]

FRICATIVES

	/f/			
food	[fud]	[fud]	[fud]	[fudz]
laughed	[lɑfd]	[lɑfud]	[lɑft]	[lɑfd]
knife	[naif]	[naif]	[naif]	[naif]

FRICATIVES (2)

Group 1			Group 2	
		/V/		
very	[vɛr]	[vɛr]	[vɛri]	[vɛr]
covered	[kavad]	[kavad]	[kavəd]	[kavəddi]
heavy	[hɛv]	[hɛv]	[hɛvi]	[hɛvi]
		/θ/		
think	[θiŋk]	[θiŋk]	[θiŋk]	[θiŋk]
something	[samθiŋ]	[samθiŋ]	[samθiŋ]	[samθiŋ]
earth	[ɛθ]	[ɛθs]	[ɛθi]	[ɜ:θi]
		/ð/		
them	[ðɛm]	[ðɛm]	[ðɛm]	[ðɛm]
that	[ðat]	[ðat]	[ðat]	[ðat]
		/S/		
soon	[sun]	[sun]	[sun]	[sun]
must	[mast]	[mʌst]	[mʌst]	[mast]
yes	[jɛs]	[jɛs]	[jɛs]	[jɛs]
		/z/		
was	[waz]	[wɔz]	[wɔz]	[waz]
these	[ðiz]	[ðiz]	[ðiz]	[ðiz]
whose	[huz]	[huz]	[huz]	[huz]
		/ʃ/		
sheep	[ʃip]	[ʃip]	[ʃip]	[ʃip]
fishermen	[fiʃamen]	[fiʃamen]	[fiʃamen]	[fiʃamen]
fish	[fiʃ]	[fiʃ]	[fiʃ]	[fiʃ]
		/ʒ/		

FRICATIVES (3)

Group 1			Group 2	
		/h/		
hot	[hot]	[hot]	[hot]	[hoti]
whose	[huz]	[huz]	[huz]	[huz]
perhaps	[pəhæps]	[pəhaps]	[pəhæps]	[pəhaps]

SEMIVOWELS AND FRICTIONLESS CONTINUANTS

Group 1			Group 2	
		/w/		
went	[went]	[went]	[went]	[went]
while	[wail]	[wail]	[wail]	[whail]
always	[olwez]	[olwez]	[olwez]	[oʃwez]
		/j/		
years	[jɛz]	[jɛz]	[jɛz]	[jɛz]
you	[ju]	[ju]	[ju]	[ju]
use	[juz]	[juz]	[juz]	[juz]
		/r/		
rock	[rok]	[roik]	[rok]	[rok]
right	[lait]	[ʃait]	[ʃait]	[rait]
very	[vɛr]	[vɛr]	[vɛri]	[vɛr]

SELECTED SAMPLE OF PRONUNCIATION PERFORMANCE IN ENGLISH VOWELS /i:/

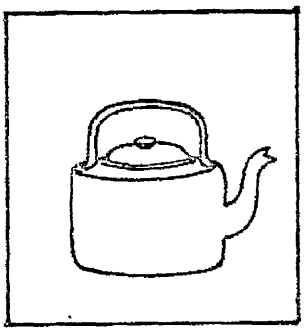
	Group 1		Group 2	
people	[pi:po]	[pipo]	[pi:po]	[pi:po]
need	[nid]	[nid]	[nid]	[nid]
sheep	[ʃip]	[ʃip]	[ʃip]	[ʃip]
meal	[fud]	[mil]	[mil]	[mil]
	/I/			
big	[ɓig]	[ɓig]	[ɓ̈ ig]	[big]
ship	[ʃip]	[ʃip]	[bo:t]	[ʃip]
mill	[mi̯t]	[mi̯t]	[mi̯t]	[mi̯t]
	/ɛ/			
men	[mɛn]	[mɛn]	[mɛn]	[mɛn]
net	[nɛ:t]	[nɛ:t]	[nɛt]	[nɛ:t]
get	[gɛt]	[gɛt]	[gɛt]	[gɛt]
bed	[bɛd]	[bɛd]	[bɛd]	[bɛd]
	/æ/			
catch	[ka̯tʃ]	[ka̯tʃ]	[kɛtʃ]	[ka̯tʃ]
back	[ɓak]	[ɓaǩ]	[ɓæk]	[bak]
sadly	[sad:lɪ]	[sɛdlɪ]	[sædlɪ]	[sadlɪ]
perhaps	[paɦæps]	[pəhaps]	[pəhæps]	[pəhaps]
	/ɑ:/			
farmers	[fa̯maz]	[fa̯məz]	[fa̯məz]	[famz]
parts	[pa̯ts]	[pa̯ts]	[pats]	[pats]
laughed	[la:fd]	[laf^{u}d]	[laft]	[laf^{u}d]
market	[ma:ket]	[ma:ket]	[maket]	[maket]

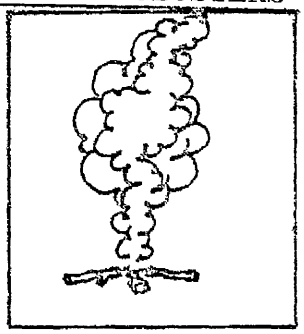
Group 1			Group 2	
		/D/		
hot	[hot]	[ɦot]	[hot]	[hoti]
rock	[rok]	[ro:k]	[rok]	[rok]
dog	[dog]	[dog̈]	[dog]	[dog]
cock	[kok]	[kɵk]	[kɒk]	[kɔk]
		/ ɔ:/		
because	[bikoz]	[bikos]	[bikos]	[bikos]
morning	[moniŋ]	[moniŋ]	[mo:niŋ]	[moniŋ]
caught	[kot]	[kot]	[kot]	[kout]
water	[wotə]	[wotə]	[wɔtə]	[wotə]
		/ʊ/		
put	[put]	[put]	[put]	[put]
book	[buk]	[buk]	[buk]	[buk]
looked	[luk^{u}d]	[lukt]	[lukt]	[lukd]
full	[fuɬ]	[fu:]	[fuɬ]	[foɬ]
		/u:/		
whose	[ɦuz]	[ɦuz]	[ɦuz]	[ɦuz]
soon	[sun]	[sun]	[sun]	[su:ni]
food	[fud]	[fud]	[fud]	[fudz]
use	[juz]	[juz]	[jʉz]	[jʉz]
		/3:/		
first	[fɛst]	[fɛst]	[fɛs]	[fɛst]
earth	[ɛθ]	[ɛθ^{s}]	[ɛθi]	[ɛ:θi]
learned	[lɛnid]	[lɛn:d]	[lɛnid]	[lɛn:d]
bird	[bɛd]	[bɛd]	[bɛd]	[bɛd]

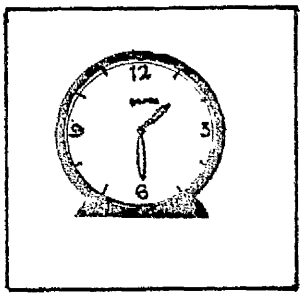
Group 1			Group 2	
		/ə/		
water	[wotə]	[wotə]	[wɔtə]	[wotə]
perhaps	[pəhæps]	[pəhaps]	[pəhæps]	[pəhaps]
towards	[təwə:dz]	[təwadz]	[təwə:dz]	[təwədz]
fishermen	[fiʃəmen]	[fiʃəmen]	[fiʃəmen]	[fiʃamen]
		/ʌ/		
covered	[kavəd]	[kavad]	[kavəd]	[kavəd]
but	[bət]	[bat]	[bat]	[bat]
money	[manə]	[man]	[mʌne]	[mʌn]
enough	[inaf]	[inaf]	[inaf]	[inaf]
		/eɪ/		
same	[sɛm]	[sɛm]	[sɛm]	[sɛm]
lakes	[rɛks]	[lɛks]	[lɛks]	[lɛks]
name	[nɛm]	[nɛm]	[nɛm]	[nɛm]
		/ɛə/		
bare	[bɛə]	[b̤ɛa]	[b̤ɛə]	[b̤ɛə]
there	[ðɛə]	[ðɛa]	[ðɛə]	[ðɛə]
		/aɪ/		
time	[taim]	[taim]	[taim]	[taim]
knife	[naif]	[naif]	[naif]	[naif]
island	[ailand]	[izland]	[ailand]	[a:land]
		/ɔɪ/		
soil	[soɪ̈l]	[soɪ̈l]	[sɔəɪ̈l]	[soɪ̈l]
pointed	[pointəd]	[pointəd]	[pointd]	[pointəd]

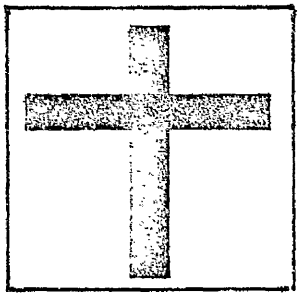
Group 1			Group 2	
		/ɑʊ/		
mountains	[mɑuntenz]	[mɑunteniz]	[mɑuntenz]	[mɑunteniz]
how	[hɑu]	[ɦɑu]	[hɑu]	[ɦɑu]
out	[ɑut]	[ɑut^{u}]	[ɑut]	[ɑut^{u}]
		/əʊ/		
boat	[bo:t]	[bo:t]	[bo:t]	[b o:t]
go	[go]	[go]	[go]	[go]
know	[no]	[no]	[no]	[no]
		/Iə/		
near	[nia]	[nia]	[niɑ]	[nia]
spear	[spia]	[spia]	[spia]	[spia]
		/ʊə/		
sure	[ʃuə]	[ʃuɑ]	[ʃua]	[ʃua]

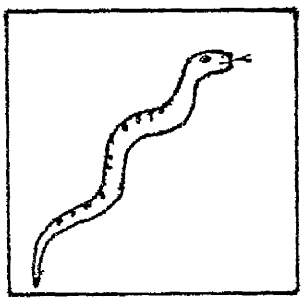
PRONUNCIATION PERFORMANCE IN ENGLISH CLUSTERS

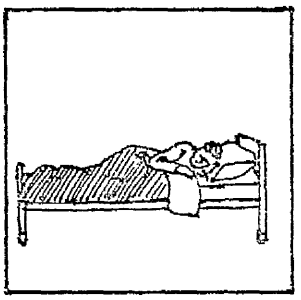


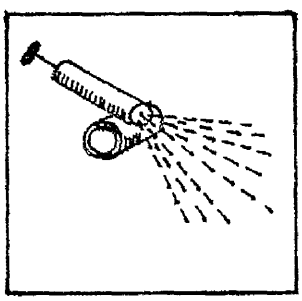


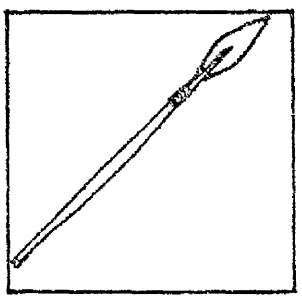


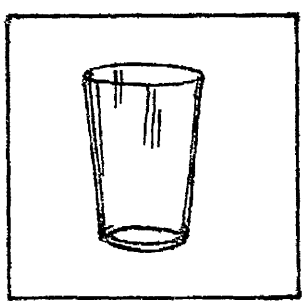


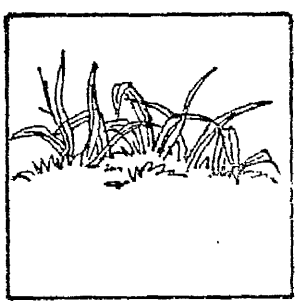


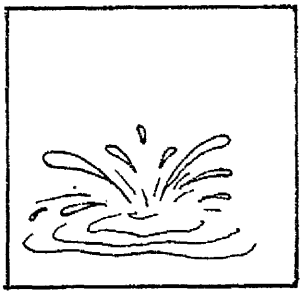


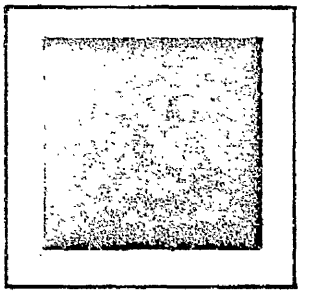


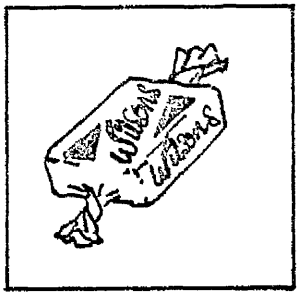








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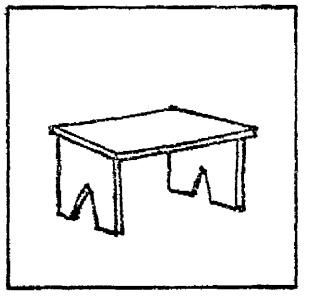

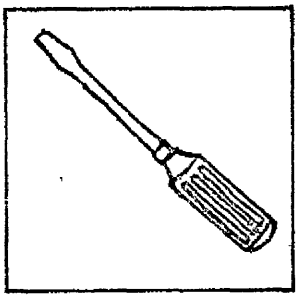

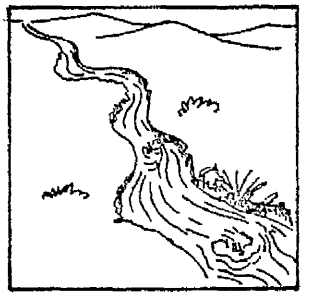

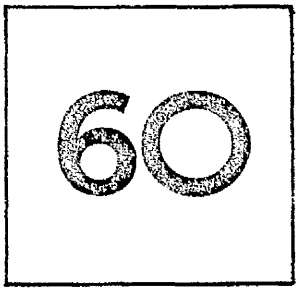
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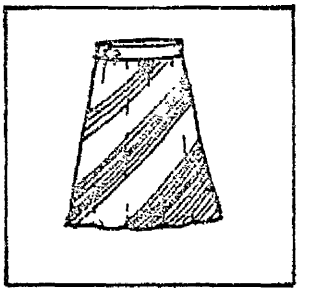

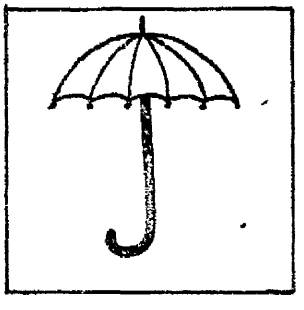

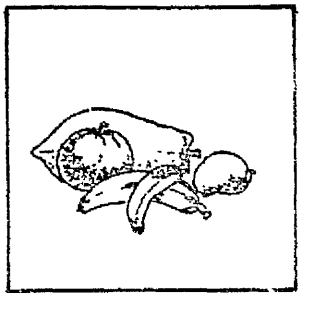

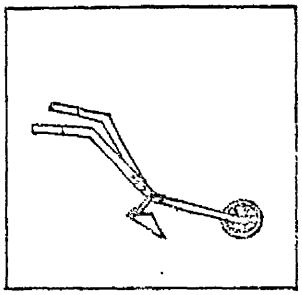

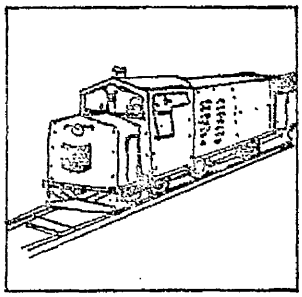

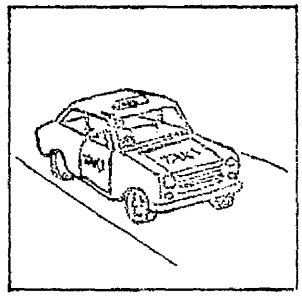

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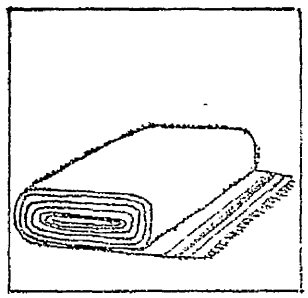

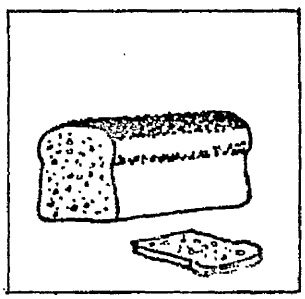

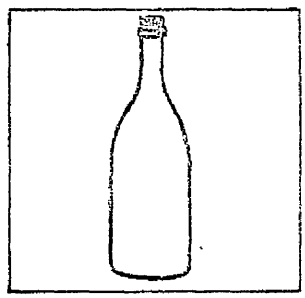

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1. Chapters giving language sketches were not included in Language in Zambia after all.